OCCUPATIONAL OUTLOOK FOR MANITOBA

1984 EDITION

Manitoba
Employment
Services and
Economic Security

OCCUPATIONAL OUTLOOK FOR MANITOBA

Research and Planning Branch
Manitoba Employment Services
and Economic Security

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FOREWORD

This report provides an assessment of past and future occupational employment opportunities in Manitoba for the use of students, vocational and career counsellors, and planners of training programs. It is intended for use in conjunction with other sources of information which provide more detailed descriptions of occupations, working conditions and training routes.

The Research and Planning Branch of Manitoba Employment Services and Economic Security would like to acknowledge the most helpful suggestions and comments received from other departments, agencies, and readers of the "Occupational Outlook". Further suggestions for incorporation in future editions would be welcomed. Please direct remarks or enquiries to:

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TABLE OF CONTENTS

Page

Foreword i

1. Introduction 1

2. How to Use the Occupational Outlook 4

3. Outlook for Manitoba to 1990 8

4. Occupational Outlook 22
   - Management, Administration and Related Occupations 24
   - Natural Sciences, Engineering and Mathematics 28
   - Occupations in Social Sciences and Related Fields 32
   - Occupations in Religion 34
   - Teaching and Related Occupations 34
   - Occupations in Medicine and Health 36
   - Artistic, Literary, Recreational and Related Occupations 39
   - Clerical and Related Occupations 43
   - Sales Occupations 47
   - Service Occupations 50
   - Farming, Horticultural and Animal Husbandry Occupations 56
   - Fishing, Trapping and Related Occupations 57
   - Forestry and Logging Occupations 57
   - Mining and Quarrying Including Oil and Gas Occupations 58
   - Processing Occupations 60
   - Machining Occupations 63
   - Product Fabricating, Assembling and Repairing Occupations 65
   - Construction Trades Occupations 74
   - Transport Equipment Operating Occupations 80
   - Material Handling and Related Occupations 82
   - Other Crafts and Equipment Operating Occupations 84

APPENDIX A - Computers and Careers 87

APPENDIX B - Alphabetical Index 96

CHAPTER 1

INTRODUCTION

1. INTRODUCTION

The Occupational Outlook for Manitoba summarizes employment prospects in the 1983-90 period for more than 150 occupations. For each occupation the Outlook provides 1981 employment levels and 1980 earnings, 1971-81 employment growth rates, an assessment of probable future conditions as they are expected to affect employment opportunities, and a description of the main entry routes and training requirements. This information has been prepared to assist students, career counsellors, planners of training programs and other interested persons in anticipating changing Manitoba job requirements.

Readers will note several changes in format of the 1984 Outlook from the 1981 edition. The most substantial is a shift from reporting major occupational groups towards individual occupations. This format allows for more detail on employment and training routes to be provided for each occupation. Commentary on industrial trends affecting each occupational group has been brought together in Section 2. As well, an article entitled "Computers and Careers" examines some of the impacts of computers on various occupations.

The job outlook is only one factor to be considered when choosing or advising on a career, but it can be a crucial one. This report is intended to increase awareness of the social and economic environment which produces the current pattern of employment opportunities. While the most current information has been used in formulating this report, changing conditions could significantly alter the outlook for any occupation. Knowledge of the background factors will enable persons involved in career choices to allow for changing circumstances.

Job opportunities may arise as a rasult of employment growth (new jobs), replacement of persons leaving the provincial labour force (retirements, deaths, emigration, out-migration, and other withdrawals), or replacement of persons who change employers or careers (turnover, promotions, inter-occupational mobility). Replacement demand normally creates many more job openings than employment growth. Because limited information is available on replacement demand or turnover, this report focuses on opportunities due to employment growth. However, occupations subject to especially high turnover or other replacement demand are noted.

The outlook for new jobs in each occupation is based on past experience and the economic and social conditions expected to prevail over the 1983-90 period. Expected industrial activity is the key variable, since all employment stems from the production of goods and services. Over the outlook period employment in various industries and occupations may be affected by changing consumer demand for different goods and services, changes in production techniques and business organization, and the level of economic activity by business and government - essentially, what is produced, how and how much.

While job opportunities are directly linked to the demand for goods and services, the supply of workers may have equally important consequences for the occupational outlook. Training levels, immigration levels and the number of entrants to the labour force can have significant effects on occupational shortages or surpluses. Employment prospects for some rapidly growing occupations may be unfavourable, for example, because many people have the skills, interests and abilities to compete for available openings. Conversely, job openings in some slower growing occupations may be hard to fill because workers lack the skills or are unwilling to work in those careers because of poor wages, unattractive working conditions, or other reasons.

It is important to realize the limitations of the information provided in the Occupational Outlook. Any forecasts of future events which will affect these occupations are subject to error. Moreover, even small occupations or those expected to decline do provide some jobs. The prospect for opportunities in a chosen career should be only one input towards a final career choice. It should not deter a person with confidence in his or her ability and with determination to reach a career goal.

CHAPTER 2

HOW TO USE THE OCCUPATIONAL OUTLOOK

2. HOW TO USE THE OCCUPATIONAL OUTLOOK

Persons using the Occupational Outlook should first have a good idea of what workers in a selected occupations do, what tools or equipment they use, and how they do their tasks. Several useful publications for learning about careers are noted at the end of this section. Once an occupation or area of interest has been selected, the Outlook may be used like a reference book. The table of contents or alphabetical index will refer the reader to the appropriate section.

Information presented for each occupation follows a standard format. The occupations are classified according to the Standard Occupational Classification. The occupations included in this report were selected on the basis of employment size or relative importance in the labour market.

The 1981 employment level, employment change from 1971 to 1981, and average earnings in 1980 are based on 1981 and 1971 Census data for Manitoba. These are estimates based on a survey of 20% of the population and are therefore subject to a degree of error (survey errors will be relatively larger for smaller groups). However, a comparison between occupations is still quite valid.

A comparison of employment levels, employment changes and income levels may help a person assess the relative opportunities and rewards for work in selected occupations. A low employment level will probably mean that few openings are normally available, compared to an occupation with a high employment level. For example, only 625 upholsterers were employed in Manitoba, compared to 10,315 truck drivers. If these occupations had the same growth rate and replacement demand rates, the number of opportunities in truck driving would be roughly 16 times as many as those in upholstering.

The terms used in describing the outlook for each occupation have been standardized as follows:

Employment growth/decline:	net change in the number of jobs
Replacement demand:	job openings due to retirements, deaths, and other withdrawals from the labour force, including turnover.

Turnover:	job openings caused by persons changing careers or employers.
Excellent Opportunities:	job openings due to employment growth and/or replacement demand will exceed the number of fully qualified applicants at almost any time during the outlook period.
Very Good Opportunities:	job openings will probably exceed the number of qualified applicants at some time during the outlook period.
Average Opportunities:	job openings will be roughly in balance with the number of qualified applicants, although some periods of imbalance may occur.
Fair Opportunities:	the number of qualified applicants will probably exceed the number of job openings at most times during the outlook period.
Poor Opportunities:	the number of qualified applicants will exceed the number of job openings at almost any time during the outlook period.

While the outlook information provided should give a feeling for employment opportunities in the selected occupations, the availability of training positions can not be estimated in advance. Firms and educational institutions have a limited capacity to provide on-the-job or in-school training for each skill or occupation. Because it may be difficult to obtain a training position for a selected occupation, persons should be aware of alternate training routes. The information on training routes also indicates what jobs are good career stepping stones and whether licences or certificates are required.

The Occupational Outlook is just one among many sources which can be used in career planning. At the start a person should know what his or her interests, abilities and goals are. Several methods are available for choosing an appropriate occupation. The following references may be used at the initial stage:

Index to Canadian Occupations
Occupational Exploration Questionnaire
CHOICES (a computerized career selection procedure)
Moving On - Careers, Jobs, Staying On

Once basic interests and abilities and compatible occupations have been identified, a description of the work involved in these occupations may be found in several other sources. The Canadian Classification and Dictionary of Occupations is the basic reference describing occupational tasks. The Standard Occupational Classification (SOC), which was used for this Outlook, provides a similar classification with a few minor differences. This source was used because the Census information is organized according to the SOC.

Another source which is much easier to read is Careers Canada, a series of 34 booklets describing work in various career areas. They describe what work is done in each occupation, what kind of training and education is required, where people work and employment outlook in the years ahead. This information is presented in the form of interviews with persons across Canada working in each occupation. Careers Manitoba provides similar information for Manitoba in reference format.

The Career Selector, published by Manitoba's Womens' Bureau, also provides a Manitoba perspective in a series of 7 booklets describing a wide range of occupations, with a focus towards women who are choosing or changing careers.

The Manitoba Career Guide provides information regarding training and education routes available in Manitoba. For further information on college and university programs in other provinces, the Canada Employment and Immigration Commission lists courses classified by occupation in College and University Programs in Canada. Course calendars which describe educational programs may be obtained from any university or community college.

Persons who are uncertain about whether their basic skills and education are adequate for entry into training or employment might be interested in PLACE, a counselling package available from Canada Employment and Immigration Commission. This package also encourages individuals to examine and overcome other barriers to employment such as personal problems, work habits, and job search skills.

CHAPTER 3

OUTLOOK FOR MANITOBA TO 1990

3. OUTLOOK FOR MANITOBA TO 1990

Opportunities for employment can change very rapidly with the cycle of business activity, and more gradually because of long-term economic and social trends. Business cycles are extremely difficult to predict and at any rate are beyond the scope of this report because of the very short-term fluctuations which can occur. The Occupational Outlook is mainly concerned with applying a general economic and industrial forecast over a seven-year period, 1983-1990, to obtain a measure of future occupational demand.

The economic forecast upon which the occupational projections are based was prepared by the Research and Planning Branch of the Department of Labour and Employment Services, in consultation with several other departments and agencies. The method used is a mixture of historical trend analysis and application of information from various sources on how past trends are likely to strengthen or weaken over the next seven years. Several components of change which will affect the Manitoba job market can be identified including: the size, age, and location of population; technological change; the ways in which business is organized and managed; government policy; and, the availablility and costs of natural resources. It is necessary to assume what magnitude and direction of change in these factors will occur in order to determine the level and structure of economic activity in 1990.

The basic assumptions used in preparing this forecast are:

- Manitoba's population will grow fairly rapidly in 1983-84, then more slowly through the remainder of the decade. The province's working age population will increase by about 1.0% per year during the 1983-90 period. The 25-44 year age group will be the fastest growing component. The trend towards relocation from rural areas to towns and to Winnipeg will continue.

- The pace of technological advances and changes in business organization will accelerate; however, the net effects on total employment and on the occupational distribution of employment by industry will be relatively small during the outlook period and difficult to isolate. Forecasts suggest that on the longer term, technological change will have profound effects on job opportunities and working conditions. Some occupations will be especially affected and these are noted in specific write-ups and in an attached article on Computers and Careers (Appendix A).

- Government economic and social policies will not change drastically; containing the growth of government will be a continuing concern, in balance with the need to maintain a basic level of services.

- Resources such as energy, metals and other materials will be available at prices which will neither cause significant industrial reorganization nor affect economic growth rates. Major expansion of hydro generating facilities in Manitoba will not begin before the late 1980's. Resource-based growth in the Prairie provinces will proceed at a slower pace than during the last five years.

INDUSTRIAL OUTLOOK

Overall economic activity is easier to assess when it is divided into sectors and industries. The goods-producing sector is composed of agriculture, other primary resource industries (such as forestry, fishing and mining), manufacturing, and construction. Goods-producing industries presently account for almost a third of all jobs in Manitoba. The other two-thirds of the jobs are in service-producing industries such as transportation, finance, trade, education, health, and government. (See Chart 2, page 20).

Over the last decade the goods-producing sector has created fewer new job opportunities than the service sector. This trend is expected to continue so that by 1990, only 25 percent of employment will be in the goods-producing sector. Agriculture is expected to provide fewer jobs, while employment in the other primary industries, manufacturing and construction will grow slowly compared to most service industries.

The service sector is expected to create roughly 40,000 jobs in the outlook period. Most of the new jobs will be in retail trade, health and welfare, business services and accommodation and food services, but almost all service industries are expected to grow.

Employment in the agriculture sector is expected to continue a slow long-term decline. Farms are continuing to grow in size (on average) and farmers and farm workers are increasingly looking for other work to supplement their income. During the 1970's a temporary increase in employment was recorded when an increase in labour-intensive vegetable and livestock farming occurred in response to higher product prices. These conditions are not expected to recur during the outlook period.

The forestry industry in Manitoba employed roughly 1,200 persons in 1981. Fishing and trapping was the fastest growing Manitoba industry during the 1970's, with employment reaching 1,100 by 1981. Very little employment growth is expected in either of these industries through 1990.

Mining employed 6,500 persons in 1981. This industry has suffered a decline in 1982 and 1983, but is expected to regain the 6,500 employment level by 1990, largely due to recovery of metal prices in the later outlook years.

The manufacturing sector employed 67,000 workers in 1981. The largest sectors were food and beverages (11,000 employees), clothing (8,000), transportation equipment (8,000), machinery (6,000), metal fabricating (6,000), and printing and publishing (6,000). Although each of these sectors (except printing and publishing) have declined in the recent recession, all are expected to grow slightly during the outlook period, with machinery manufacturing leading all other manufacturing sectors.

The construction industry in Manitoba in 1983 had the lowest employment level since the 1960's. Activity is expected to increase over the outlook period. The pattern of recovery will probably have residential construction growing faster at first, followed by growth in commercial construction by 1985. Hydro construction will boost employment in the later years. (It should be noted that the persons involved in the construction industry are not all in the construction trades - some persons are in management, sales, clerical, and other occupations. As well, Chart I shows that many of the construction trades persons are involved in other industries such as transportation and manufacturing).

The remainder of industrial activity falls into the broad category of service-producing industries. The transportation industry has always been a major employer in Manitoba, although employment growth has slowed since the early 1970's. All modes of transportation are represented in the employment figures: land, air, sea and inland waterways. Railroads and truck transportation have traditionally been strong in Manitoba. It is expected that transportation employment will show slow growth to 1990. Communications (telephone systems, broadcasting, etc.) is expected to grow faster than average, while Other Utilities are expected to grow slower than average. The Transportation, Communications and Other Utilities sector in total is expected to reach 51,000 employed by 1990.

Manitoba's trade sector has had rapid employment growth in the 1970's, largely due to the growth of part-time work and an expanding retail sector. Both wholesale trade and retail trade employment are expected to continue growing, but at a rate slightly below the provincial average.

The Finance, Insurance and Real Estate sector was a fast growing industry in the 1970's and is expected to continue to grow rapidly to 1990. Most of the new jobs will be in banks and other financial institutions, and in insurance and real estate agencies.

Community, Business and Personal Services is by far Manitoba's largest industrial sector and was also one of the fastest growing industries in the 1970's. It includes hospitals, schools, hotels, restaurants, business services and several other services. The pattern of growth of the last decade will be somewhat altered in the 1980's. Educational institutions were one of the fastest growing sectors in the early 1970's but will have below average growth from 1983 to 1990. Health and welfare services, which includes hospitals, personal care homes and child care centres, will continue to have above average growth. Hotels and restaurants will also be growing faster than average. Services to business management such as accounting, legal offices, engineering and architectural firms, computer services and other companies specializing in various aspects of management is expected to be the fastest growing industry in any sector. Other industries in this sector such as religious organizations, amusement and recreation services, and personal services will grow at roughly the provincial average.

The public administration sector consists of the three levels of government: federal, provincial and local. The provincial and local levels of government have been the fastest growing of these sectors in the 1970's, although the federal government component (including armed forces) is the largest. For the 1983-90 period only average growth is expected in all three sectors because of the predominance of restraint in government policy.

OCCUPATIONAL OUTLOOK

Industrial activity is the main determinant of occupational demand. Because industries have differing occupational structures, a rapid growth in industry A (e.g., hospitals) combined with employment declines in industry B (e.g., mining) could produce a shortage in certain occupations (nursing) in the expanding industry and high unemployment in occupations (miners) employed in the declining industry.

The shift of industrial activity from goods-producing to service-producing sectors is largely the cause of the rapid increase in managerial, professional and technical employment and relatively little change in blue-collar production and construction jobs over the 1971-81 period.

Chart 1 indicates industries in which occupations are concentrated. It clearly displays how the managerial, professional and technical occupations (SOC groups 11 to 33) are found mainly in faster-growing service industries, while blue collar occupations (SOC groups 71 to 95) are relatively concentrated in slower-growing goods-producing industries. Chart 3 shows where growth is expected by occupational group.

Managerial and administrative occupations are found in all industries, but most are employed in community, business and personal services; trade; public administration; and manufacturing. Growth is expected in all these sectors, while the business service industries will be the fastest growing. Specialized managers and administrators below the senior level are likely to have the best opportunities - financial, sales, personnel, production and services managers, for example.

The natural sciences, engineering and mathematics occupations are concentrated in community, business and personal services; public administration; transportation, communication and other utilities; and manufacturing. Rapid growth in business services will lead these sectors, and increasing research and development in all industries will create favourable opportunities for many of the scientific and technical occupations, particularly systems analysis and computer programming.

The social sciences grew rapidly in the 1970's due to increased demand for community, business and personal services and government program planning. The social science occupations will again be among the fastest growing groups, with social work and law occupations leading this group. In spite of rapid growth, opportunities will be limited in most cases by a large number of qualified applicants.

Occupations in religion are almost exclusively employed in the community, business and personal service sector. Employment in religious organizations and occupations is expected to grow at about the provincial average.

Almost all the teaching occupations are employed in educational institutions (part of the community, business and personal services sector). Employment is expected to grow at a slower rate than the provincial average, with community colleges, trade schools and private schools growing the fastest. The best opportunities will be in fields with close vocational linkages and specialty fields such as music and languages.

The medicine and health occupations are heavily concentrated in community, business and personal services - largely hospitals, nursing homes, child-care centres and doctors' offices. Favourable opportunities in many of the health occupations will be related to faster than average growth of child-care centres, nursing homes and homes for the elderly, as well as continued slower growth for other health service organizations.

The artistic, literary, sport and recreation occupations are largely employed in community, business, and personal service industries, but also have significant representation in the communications, manufacturing, trade and public administration sectors. These occupations are expected to grow faster than average due to growth in all these sectors. Opportunities may nevertheless be limited because of a large number of qualified applicants.

Clerical occupations are widely distributed among the sectors and can be found in every industry. Because of this broad distribution, and in spite of technological change, the employment of clerical workers is expected to grow about as fast as average. Limited opportunities may exist in some occupations because of a large number of qualified applicants.

Sales occupations are concentrated in the wholesale and retail trade sector, but the finance, insurance and real estate and manufacturing sectors also account for a significant proportion. Employment in these occupations is expected to grow almost as fast as the provincial average.

Service occupations are mostly located in community, business and personal services, with a significant number also employed in the public administration sector. Growth in these occupations will be slightly faster than average, with the greatest growth in occupations involved in hotels and restaurants: food and beverage preparation and services, and lodging and accommodation services.

Farming occupations are almost entirely in the agriculture industry, where a decline in employment is expected. Employment of all farming occupations except landscaping is expected to decline.

Fishing, hunting and trapping occupations grew rapidly in the early 1970's as the Manitoba fishing industry was established, but little change has occurred recently. No growth is expected in these occupations.

Occupations in forestry and logging are largely connected with the forestry industry, with a small proportion involved in manufacturing and public administration. Very little employment growth is expected in forestry and logging occupations.

Mining occupations experience significant increases and decreases as the mining industry goes through periods of expansion and decline. It appears that employment may decline for a year or two and then recover somewhat later in the outlook period.

Processing occupations are heavily concentrated in manufacturing (mostly food and beverage, and primary metal producing), with a significant number also employed in the trade sector. Few of these occupations are expected to show any growth during the outlook period because of slower industrial growth in these sectors and technological change.

Machining occupations are found mostly in manufacturing industries, with significant employment also in transportation. Very slow growth is expected in these occupations.

Product fabricating, assembling, and repairing occupations are concentrated in the manufacturing and trade sectors. Growth overall will be slow, but not all occupations will be increasing. Occupations in garment manufacturing are expected to decline, while mechanics and repairers will increase at about the provincial average.

Construction occupations are concentrated in the construction and transportation sectors. Growth at almost the provincial rate is expected, although activity is expected to shift from residential and transportation development in the early years to industrial construction (including hydro) in the late 1980's. The electrical trades will have the best opportunities throughout the 1980's.

Transportation equipment operating occupations are concentrated in the transportation sector, with significant employment levels in the trade and community, business and personal service sector. Below average growth is expected for these occupations, with the greatest opportunities occurring in courier services.

Material handling occupations can be found mainly in the manufacturing, trade and transportation sectors. Below average growth is expected for these occupations, and the large number of low-skilled people available for these jobs will reduce opportunities even further.

Persons in other crafts and equipment handling are mostly found in manufacturing; transportation, communications and other utilities; and community, business and personal services. Employment is expected to grow at about the provincial average, with printing and electronic communications equipment handling providing most new opportunities.

TRENDS IN WORKING CONDITIONS

The introduction of new technology will demand many changes of workers in the next decade. Some of the changes expected are as follows:

- In general, higher levels of education will be required, both academic and technical. The number of highly qualified workers will be increasing much more rapidly than unskilled employment.

- Increased skills in conceptual thinking, analysis and problem solving will be required as a result of the vast amounts of information becoming available through computer useage.

- On the other hand, some occupations will be subject to "deskilling".

- There will be higher demand in many occupations for workers who are "computer literate".

- Some industries will offer fewer employment opportunities, and even reduce their employment levels, as a result of labour-saving applications of technology.

- There will be increased requirements for retraining during one's career. Workers may have to "learn to learn" and be prepared for a lifetime of learning in order to stay employed. While continuous upgrading is already required for many professional occupations, this will extend to many other jobs in the future.

- The way in which work is organized and tasks are distributed between workers may be changed significantly. Working hours will probably become more flexible, as will the location of work.

Several other changes in working life are also expected in the next decade. A recent move by government to encourage scientific research and development of new products will probably create additional demand for scientific, engineering and technical workers. During the recent recession employers began to become more cautious in expanding their staffs, offering temporary and contractual employment to some workers. Contract employment may expand if unemployment rates for highly qualified workers remain high. The long-term trend towards a shorter work week will probably continue. Part-time work is becoming much more common than a few years ago, largely the result of working students and housewives.

On the other hand, some changes in the structure of business may have little effect on working conditions. Regional employment concentrations will remain similar; resource-based employment will remain in rural and remote areas, while industrial and service employment will be largely in urban centres. Businesses will maintain a natural tendancy to grow, but employment opportunities will still be more numerous in small firms. Some jobs will continue to be seasonal in spite of any innovations.

CHART 1
WHERE OCCUPATIONS ARE EMPLOYED

SOC	OCCUPATIONAL GROUP	INDUSTRY								
		AGRICULTURE	FORESTRY, FISHING & MINES	MANUFACTURING	CONSTRUCTION	TRANSPORTATION COMMUNICATIONS & UTILITIES	TRADE	FINANCE, INSURANCE & REAL ESTATE	COMMUNITY BUSINESS & PERSONAL SERVICE	PUBLIC ADMINISTRATION & DEFENCE
11	Managerial, Administrative	X		X		X	XX	X	XX	X
21	Natural Sciences, Engineering & Mathematics		X	X		X			XX	XX
23	Social Sciences								XXXX	XX
25	Religion								XXXXX	
27	Teaching & Related								XXXXX	
31	Medicine & Health								XXXXX	
33	Artistic, Literary & Performing Arts			XX		X	X		XXX	X
33	Sport & Recreation								XXXX	XX
41	Clerical and Related			X		X	XX	X	XX	X
51	Sales Occupations			X			XXXX	X		
61	Service Occupations								XXXX	X
71	Farming, Horticultural & Animal Husbandry	XXXXX								

LEGEND:

Where Occupations are Employed:

XXXXX = over 80%
XXXX = 60% to 80%
XXX = 40% to 60%
XX = 20% to 40%
X = 5% to 20%

INDUSTRY DIVISIONS:

Agriculture: Farms & Agricultural Services

Forestry: Logging & Forestry Services; Fishing: Fishing, Fishery Services, Hunting & Trapping Mines: Metal & Non-metal mines and mills, Mineral Fuels, Quarries & Services to Mining

Manufacturing: Producers of Durable and Non-Durable Goods

Construction: General & Special Contractors

CHART I cont'd

SOC	OCCUPATIONAL GROUP	INDUSTRY								
		AGRICULTURE	FORESTRY, FISHING & MINES	MANUFACTURING	CONSTRUCTION	TRANSPORTATION COMMUNICATIONS & UTILITIES	TRADE	FINANCE, INSURANCE & REAL ESTATE	COMMUNITY BUSINESS & PERSONAL SERVICE	PUBLIC ADMINISTRATION & DEFENCE
73	Fishing, Hunting & Trapping		XXXXX							
75	Forestry and Logging		XXXX	X						X
77	Mining & Quarrying, Including Oil & Gas Field		XXXXX							
81/82	Processing		X	XXXX			X			
83	Machining			XXXX		X	X		X	
85	Product Fabricating, Assembling & Repair			XXX		X	XX		X	
87	Construction			X	XXX	XX				X
91	Transport Equipment Handling			X		XXX	X		X	
93	Material Handling			XX		XX	XX			
95	Other Crafts & Equipment Operating			XXX		XX			X	X

INDUSTRY DIVISIONS:
cont'd

Transportation, Communication & Utilities: Transportation & Storage, Communication, & Electric Power, Gas & Water Utilities

Trade: Wholesale & Retail Trade

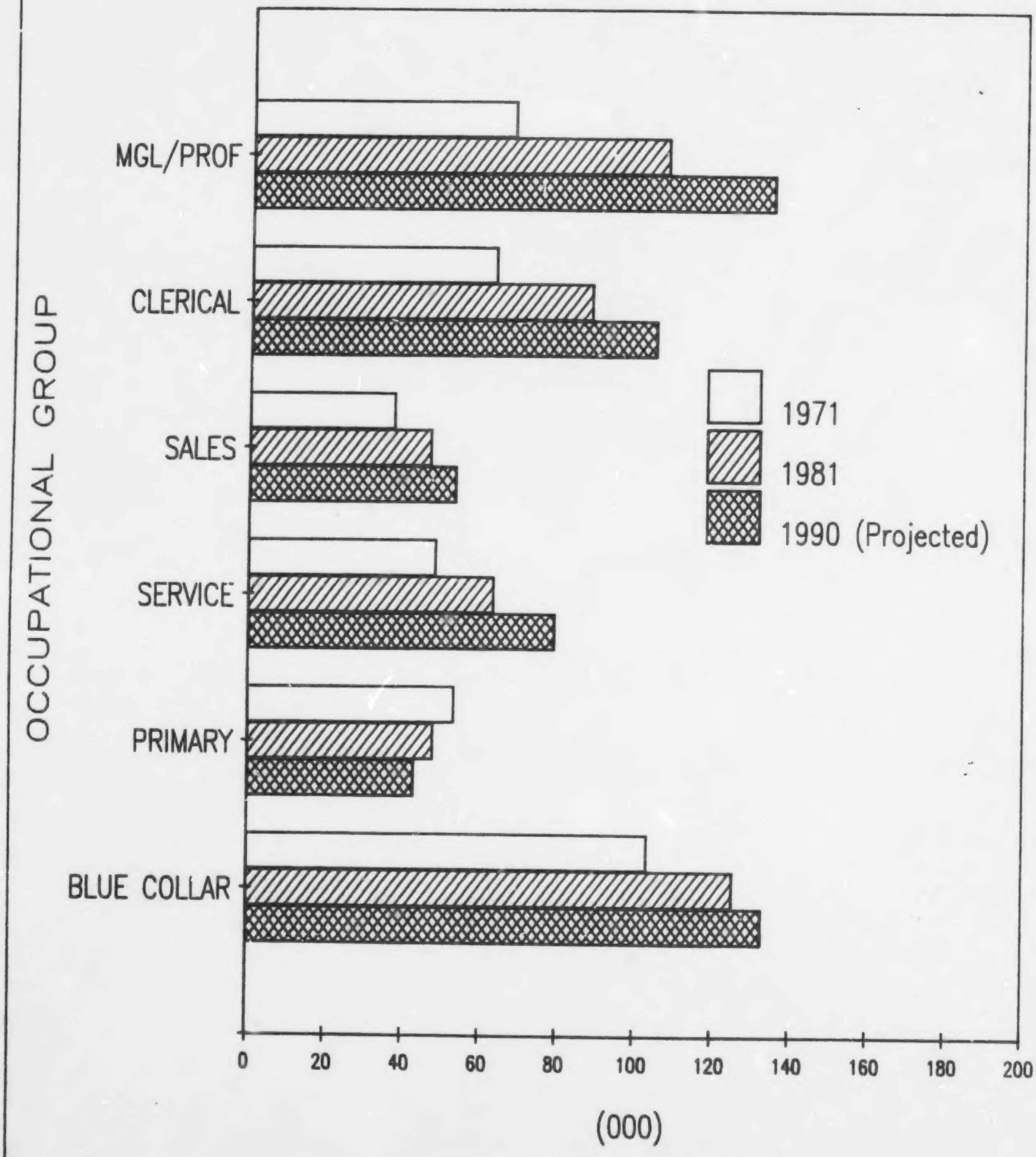
Finance, Insurance & Real Estate: Financial Institutions, Insurance Carriers & Agencies, Real Estate Agencies & Developers

Community, Business & Personal Service: Education, Health, Religious Organizations, Amusement & Recreation Services, Hotels, Restaurants & Misc. Services

Public Administration & Defence: Federal, Provincial & Local Governments & Armed Forces

CHART 2

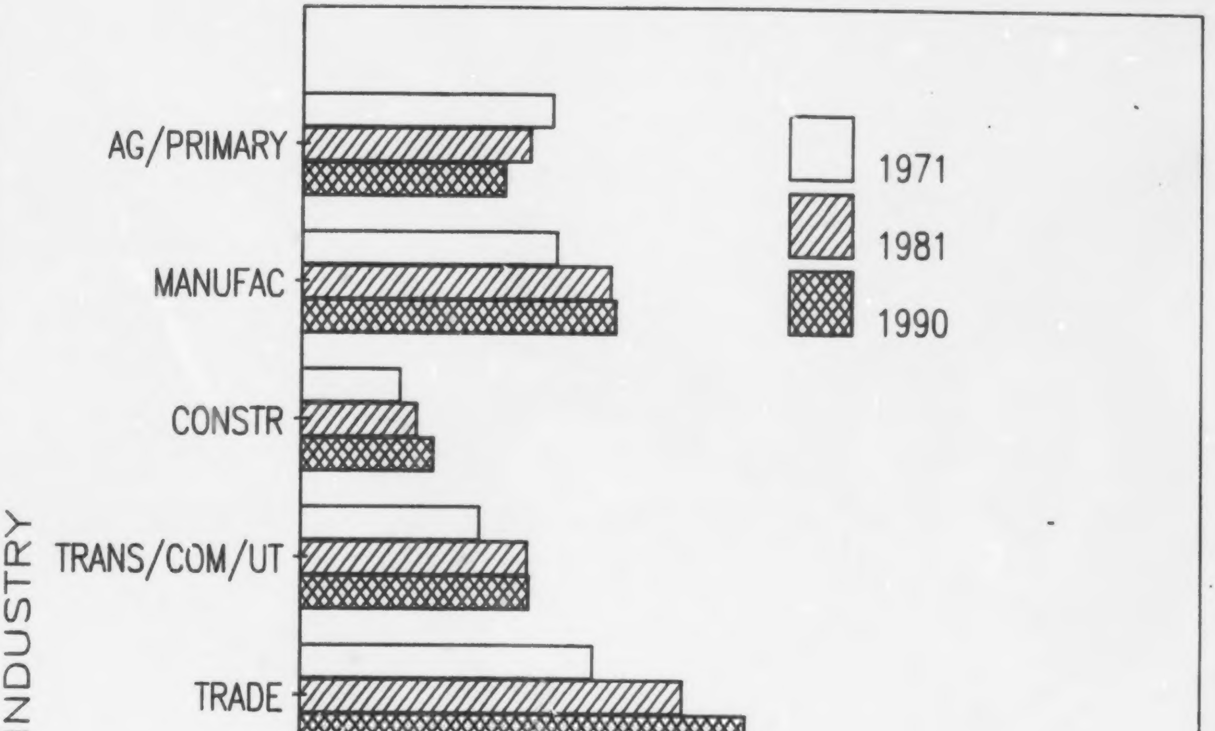
MANITOBA EMPLOYED BY OCCUPATION 1971, 1981, and 1990 (Projected)



SOURCE; Census of Population, Statistics Canada; R&P Projections

CHART 3

MANITOBA EMPLOYED BY INDUSTRY 1971, 1981, and 1990 (Projected)



SOURCE; Census of Population, Statistics Canada; R&P Projections

CHAPTER 4

OCCUPATIONAL OUTLOOK

SOC 1113 to 3375:

MANAGERIAL/PROFESSIONAL

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Government Administrators (1113)	1065	51%	$27,268	Average

EMPLOYMENT PROSPECTS TO 1990

Employment of senior and middle management in government expected to grow as fast as average, as government services are extended to more areas and a greater population. Most openings filled through internal promotions.

MAIN TRAINING ROUTES

Most senior government administrators have a university degree in some field and years of experience in government. The U of W and U of M offer programs in administrative studies with a pattern focusing on public policy.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Inspectors and Regulatory Officers, Government (1116)	1220	39%	$22,150	Fair

EMPLOYMENT PROSPECTS TO 1990

Employment in these occupations expected to grow as fast as average, with changing government policies a critical factor. Major areas include health and safety, employment standards, building standards, etc. Keen competition expected for government jobs.

MAIN TRAINING ROUTES

Many inspectors are required to have a technical background, e.g., engineering, sciences, etc. Various related courses at the universities and community colleges. Other jobs require general education or experience in a relevant field or trade.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Administrators in Teaching (1133)	1300	2%	$31,647	Poor

EMPLOYMENT PROSPECTS TO 1990

Little change in employment expected for school administrators. The number of schools is expected to decline slightly, reducing demand for principals. Elementary and post-secondary schools will have steadier opportunities than secondary schools. Keen competition is expected.

MAIN TRAINING ROUTES

Experience in teaching is required for entry into administrative positions. Most principals have a Master of Education degree, available from the U of M.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Administrators in Medicine and Health (1134)	730	178%	$26,510	Very Good

EMPLOYMENT PROSPECTS TO 1990

Employment of health administrators expected to grow faster than average. Extended care and personal care homes will account for most oportunities. Opportunities for qualified senior administrators should be very favourable.

MAIN TRAINING ROUTES

Hospital administrators normally have taken courses in health care administration and have several years of related experience. A Master's degree in health services administration is available in other provinces. The U of M and U of W and community colleges offer courses in public and business administration which would be useful. The U of M offers a certificate program for nurses in administrative positions.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Financial Management (1135)	2450	n.a. (292% for all senior management occupations)	$25,372	Average

EMPLOYMENT PROSPECTS TO 1990

Employment of financial managers expected to grow as fast as average. Most opportunities will be in banks and other financial institutions. Keen competition will occur for jobs, particularly towards the end of the outlook period, due to increasing numbers of qualified accountants and financial officers.

MAIN TRAINING ROUTES

Financial managers usually have several years' experience in accounting, auditing or credit management. Business administration courses are available at the universities, community colleges, and private trade schools.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Personnel and Industrial Relations Management (1136)	835	n.a. (292% for all senior management occupations)	$25,866	Average

EMPLOYMENT PROSPECTS TO 1990

Employment expected to grow as fast as average. Large firms or ogranizations in all industries require personnel managers. Keen competition is expected for these jobs, particularly in labour relations. (See SOC 1174 - Personnel and Related Officers.)

MAIN TRAINING ROUTES

A university degree is usually required with a major in business administration or commerce. Experience in lower-level personnel jobs is also required. A background in law may be useful in industrial relations. Continuing education courses in personnel management may also be useful.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Sales and Advertising Management (1137)	7055	n.a. (292% for all senior management occupations)	$21,335	Average

EMPLOYMENT PROSPECTS TO 1990

Sales and advertising managers expected to grow as fast as average. Marketing of new products and services will probably require more managers with technical skills in areas like electronics and data processing.

A background in sales or advertising is normally required for manager positions. Courses in marketing are available in the business administration programs at universities and community colleges. Red River C.C. has a course in commerce/industrial sales and marketing. Success Commercial College has courses in business administration and introductory management.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Services Management (1142)	2065	n.a. (292% for all senior management occupations)	$16,527	Very Good

EMPLOYMENT PROSPECTS TO 1990

Employment of managers expected to increase slightly faster than average as new hotels, motels, restaurants, lodges and similar establishments are built. Replacement demand will be important as a source of job openings.

MAIN TRAINING ROUTES

Several years of experience in lower level positions such as desk clerk and food and beverage waiting can lead to supervisory and management positons. A course in hotel and restaurant administration is available at Red River C.C.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Production Management (1143)	1650	n.a. (292% for all senior management occupations)	$26,225	Fair

EMPLOYMENT PROSPECTS TO 1990

Employment of production managers expected to grow almost as fast as average as the number of manufacturers increases. Managers with technical skills in areas like electronics and data processing will probably have best opportunities.

MAIN TRAINING ROUTES

Experience in a production plant at increasing responsibility levels is normally required. Engineers, technicians, and highly skilled production workers may advance to production management. Courses in business administration provide a useful educational background. The universities, community colleges and private trade schools offer such courses.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Management, Construction Operations (1145)	1105	n.a. (292% for all senior management occupations)	$25,454	Fair/Average

EMPLOYMENT PROSPECTS TO 1990

Employment expected to grow slower than average. Opportunities should improve later in outlook period with hydro development. These occupations mostly involved in large industrial, institutional and residential developments.

MAIN TRAINING ROUTES

Several years of experience in construction trades can lead to management positions. Large projects are often managed by persons with engineering and architectural degrees. The U of M offers programs in these areas. Most of the construction trades are apprenticeable, or may be learned through on-the-job experience.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Farm Management (1146)	2460	n.a. (292% for all senior management occupations)	$12,778	Fair

EMPLOYMENT PROSPECTS TO 1990

Employment expected to increase very slowly. Farms will continue to increase in size and decline in number, resulting in contrasting effects on the demand for managers. Replacement demand will create several opportunities.

MAIN TRAINING ROUTES

Several years of experience in farm work are required for farm management positions. Education in business management is becoming more valuable. The U of M offers a 4-year degree program and a 2-year diploma program in agriculture. Steinbach and Crocus Plains Regional Secondary Schools and Assiniboine C.C. have programs in agriculture.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Accountants, Auditors and Other Financial Officers (1171)	5780	11%	$22,737	Very Good

EMPLOYMENT PROSPECTS TO 1990

Employment expected to grow faster than average as business and government managers require improved budgetting and accounting information. Opportunities will be better in smaller communities than in Winnipeg.

MAIN TRAINING ROUTES

Three major institutes provide professional training for employed accounting students: the Institute of Chartered Accountants, the Certified General Accountants Assoc. and the Society of Management Accountants. Many successful accounting students have a background in business administration, which may be studied at community colleges, U of M and private trade schools.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Personnel and Related Officers (1174)	1335	23%	$21,513	Very Good

EMPLOYMENT PROSPECTS TO 1990

Employment of personnel officers expected to grow faster than average. Every organization with employees must have someone to do the hiring. Large companies and governments have several personnel officers with responsibilities for staffing, employee relations, training, and contract negotiations. With new trends in working conditions (e.g., part-time work, new labour standards, etc.), the need for personnel specialists will increase.

MAIN TRAINING ROUTES

Most personnel officers have some post-secondary education, in a field related to business management, the social sciences, or behavioral sciences. The U of M offers several personnel/labour relations courses in the commerce faculty.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Occupations Related to Management and Administration, n.e.c. (1179)	1970	n.a. (2% for all junior management occupations)	$21,426	Very Good

EMPLOYMENT PROSPECTS TO 1990

Occupations such as **business agents, public relations agents, sales promoters and specialized management consultants** are expected to grow faster than average during the outlook period.

MAIN TRAINING ROUTES

Backgrounds for these occupations can be quite diverse and normally they require special interests and talents. Most of these occupations require some post-secondary education or several years of experience in the specialty.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Chemists (2111)	305	10%	$20,187	Very Good

EMPLOYMENT PROSPECTS TO 1990

This is a small employment occupation and will likely offer only a few opportunities in spite of above average growth. Increased research and development activity should create opportunities in mining, manufacturing and government.

MAIN TRAINING ROUTES

A university degree in chemistry is a minimum requirement for most entry positions. Research and Development positions usually require a post-graduate degree. All three Manitoba universities offer chemistry programs; the U of M provides a post-graduate program.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Physical Sciences Technicians & Technologists (2117)	625	-6%	$19,628	Very Good

EMPLOYMENT PROSPECTS TO 1990

Opportunities are expected to be favourable for food technicians, chemical technicians, and other scientific technicians involved in research and product development and quality control. Most opportunities will arise due to industrial growth rather than replacement demand.

MAIN TRAINING ROUTES

The best opportunities are for graduates of practical training programs such as at Red River C.C.. Students of university science programs should find some opportunities.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Life Sciences Technologists & Technicians (2135)	535	-7%	$18,268	Average

EMPLOYMENT PROSPECTS TO 1990

Average employment growth expected for agricultural technicians involved in plant sciences, soil sciences and animal husbandry. Agricultural and biological technicians and technologists will be required in research and development for agricultural development and medicine and health. Industrial growth will create more opportunities than replacement demand.

MAIN TRAINING ROUTES

Community college courses in biological sciences and technology are preferred by many employers. Students of university programs in biology, agriculture, and other life sciences may qualify for some positions.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Agriculturists (2131)	445	18%	$27,045	Very Good
Agricultural Engineers (2146)	35	n.a.	$34,679	Very Good

EMPLOYMENT PROSPECTS TO 1990

Better than average opportunities expected. Due to increasing world demand for food, improved methods of production and management of soil and water resources will be required. Most opportunities will be in research and development in agricultural businesses and government, and in resource management.

MAIN TRAINING ROUTES

A university degree in the life sciences or agriculture is the normal requirement for agricultural scientist positions. All three Manitoba universities provide life sciences programs; the U of M offers a 4-year program leading to a Bachelor of Science in agriculture. Agricultural engineers usually have completed a university degree. The U of M offers an agricultural engineering program.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Civil Engineers (2143)	1165	20%	$29,161	Average

EMPLOYMENT PROSPECTS TO 1990

Employment expected to grow about as fast as average, with improving opportunities towards the end of the outlook period as large development projects commence. Most civil engineers are employed in construction, transportation systems, utilities, and government. This is the largest branch of engineering in Manitoba.

MAIN TRAINING ROUTES

Almost all civil engineers are graduates of university engineering programs (U of M). Trained technologists or technicians with extensive work experience may be promoted to engineering positions.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Electrical Engineers (2144) **(Including Electronic Engineers)**	1080	48%	$26,392	Excellent

EMPLOYMENT PROSPECTS TO 1990

Electrical/electronic engineers were the engineering group with the most opportunities during the 1970's. Employment is expected to continue at a faster than average growth. Greater use of electronic equipment such as computers, communications equipment, sophisticated controls, and a wide range of consumer goods will be the main factor. Manitoba's position as a major hydro-electric power producer may induce further opportunities in research and development.

MAIN TRAINING ROUTES

Almost all electrical/electronic engineers are graduates of university engineering programs (U of M). Trained technologists or technicians with extensive work experience may be promoted to engineering positions.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Mechanical Engineers (2147)	590	60%	$25,733	Very Good

EMPLOYMENT PROSPECTS TO 1990

Mechanical engineers were one of the fastest growing engineering groups in 1971-81. Employment is expected to grow faster than average as industry applies more advanced machinery, tools and processes. Opportunities are expected in research and development, technical sales, and maintenance operations.

MAIN TRAINING ROUTES

Almost all mechanical engineers are graduates of university engineering programs (U of M). Trained technologists or technicians with extensive work experience may be promoted to engineering positions.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Community Planners (2157)	240	n.a.	$26,957	Poor

EMPLOYMENT PROSPECTS TO 1990

Although this occupation grew rapidly in the 1970's, limited opportunities are expected in the outlook period. Opportunities will be related to population growth in urban and suburban areas. Replacement demand will be very low.

MAIN TRAINING ROUTES

Most community planners have a post-graduate degree or extensive experience in urban and regional planning. A bachelor's degree in environmental studies or engineering is often a stepping stone in this career.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Surveyors (2161)	700	103%	$18,091	Average

EMPLOYMENT PROSPECTS TO 1990

Employment expected to grow about as fast as average. As construction activity and resource development increase over the outlook period, opportunities should improve. Opportunities are very susceptible to economic conditions.

MAIN TRAINING ROUTES

Programs in surveying (for technicians and technologists) are available at Red River and Keewatin Community Colleges. Civil engineer graduates from universities may work as surveyors.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTUREE OPPORTUNITIES 1983-90
Draughting (2163)	1335	15%	$17,469	Average

EMPLOYMENT PROSPECTS TO 1990

Average employment prospects expected for drafters. Construction and manufacturing activities and business services will create new employment opportunities. By the end of the outlook period, computer-aided drafting may reduce the need for low-skilled drafters such as tracers and opportunities should be best for those trained in electronic drafting systems.

MAIN TRAINING ROUTES

Courses in drafting technology (architectural, machine, mechanical, electrical, design) are available at Red River and Assiniboine Community Colleges. Persons trained in engineering technologist or technician courses also receive training for design work. Several secondary schools provide programs in design and drafting.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Architectural and Engineering Technologists and Technicians (2164/5)	Arch.-35 Eng.-1675	Arch.-n.a. Eng.- 74%	Arch.-$16,650 Eng. -$20,855	Very Good

EMPLOYMENT PROSPECTS TO 1990

Favourable employment prospects expected for engineering and architectural support workers. Technologists and technicians will be in demand whereever engineers and architects are employed. Fields such as electronic, electrical, civil, mechanical, chemical, industrial engineering, and architecture will be growing.

MAIN TRAINING ROUTES

Most technicians and technologists have received formal training in any of several fields at community colleges.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Systems Analysts and Computer Programmers (2183)	1875	140%	$20,382	Excellent

EMPLOYMENT PROSPECTS TO 1990

This was one of the fastest growing occupational groups in the 1970's and is expected to be the fastest growing occupation throughout the outlook period. Applications programmers will find the best opportunities, in business management and financial applications. Systems analysts will also be required to set up computerized management systems. The best opportunities will be for those familiar with business management techniques. (See Appendix A)

MAIN TRAINING ROUTES

Training in computer programming may be obtained at any Manitoba university or community college, or at private trade schools. Several secondary schools also offer basic computer programming courses. Systems analysts normally have programming experience and/or a degree in computer science, which can be obtained at the University of Manitoba.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Economists (2311)	380	148%	$28,188	Average

EMPLOYMENT PROSPECTS TO 1990

This occupation grew rapidly during the 1970's, although total employed is still relatively small. Faster than average growth expected during the outlook period because of increased demand for economic analysis by business and government. Keen competition is expected despite above average growth, because of large numbers of qualified applicants. Most jobs in urban areas.

MAIN TRAINING ROUTES

The best opportunities will be for economists with a masters degree. Undergraduate economics programs are available at all three Manitoba universities, and post-graduate studies may be pursued at the U of M.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Social Workers (2331)	1595	125%	$19,907	Average

EMPLOYMENT PROSPECTS TO 1990

Social work was one of the fastest growing occupations during the 1970's and is expected to have above average growth in the outlook period. Employment opportunities will arise throughout the province due to increased demand for social services to low-income families, the elderly, the disabled, and other disadvantaged groups. Keen competition is expected nevertheless, as large numbers of qualified applicants exist.

MAIN TRAINING ROUTES

Most jobs in social work now require a Bachelor of Social Work as a minimum requirement. A Social Work program is available at the U of M.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Welfare and Community Services (Includes Recreation Directors; Social Services Assistant; Camp Counsellors; etc.) (2333)	2965	237%	$13,923	Average

EMPLOYMENT PROSPECTS TO 1990

Rapidly increased demand for leisure activities and social services led to a tripling of employment in these occupations in the 1970's. While growth is expected to slow, these occupations will continue to have favourable opportunities. Much of the work is on a part-time or seasonal basis.

MAIN TRAINING ROUTES

Work in these occupations can be at many levels of responsibility and may require very little training or a university degree, depending on the particular job. Some regional secondary schools offer a program in Family and Community Services. All three community colleges offer courses in social, welfare and community work. The universities also offer related courses such as sociology and psychology.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Lawyers and Notaries (2343)	1165	70%	$36,571	Average

EMPLOYMENT PROSPECTS TO 1990

The number of practising lawyers is expected to increase faster than average in the outlook period, although keen competition is expected for jobs in urban areas.

MAIN TRAINING ROUTES

Practising lawyers must be admitted to the provincial bar. A bachelor degree in law is the normal requirement, after which one year must be spent articling with a practising lawyer before admission to the Manitoba Bar Association. The U of M has a faculty of law. Entry into law schools is limited to the number of student positions, with several applicants for each position.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Librarians, Archivists and Conservators (2351)	630	200%	$18,675	Fair

EMPLOYMENT PROSPECTS TO 1990

Employment of librarians, archivists and conservators is expected to grow about as fast as average. Expertise in computerized information systems will be in greater demand among librarians working in public, academic, and business libraries. Keen competition is expected to continue for these jobs.

MAIN TRAINING ROUTES

Professional librarians usually are required to have a master's degree in library science (obtainable from several universities in other provinces). Archivists and conservators generally have a degree in history or fine art.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Ministers of Religion (2511)	1045	7%	$13,024	Average

EMPLOYMENT PROSPECTS TO 1990

Employment prospects are expected to vary significantly depending on faith and even branches within faiths. Replacement demand will be a significant factor in all faiths. However, a large number of qualified clergy will cause keen competition for most positions.

MAIN TRAINING ROUTES

Qualifications vary considerably between faiths. Foremost is a strong spiritual belief and a desire to serve and teach others. Religion and theological work may be studied at universities or theological seminaries in Manitoba or elsewhere.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
University Teachers (2711)	1530	31%	$32,839	Poor

EMPLOYMENT PROSPECTS TO 1990

University enrollments and budget restraints are the main factors determining demand for university teachers. Limited enrollment growth is expected overall in the outlook period; however some faculties such as science, engineering and management are expected to grow faster than the humanities and social sciences. Part-time students are increasing faster than full-time, which means more evening courses.

MAIN TRAINING ROUTES

Most faculties now require a doctorate for faculty positions. Lecturers normally have a master's degree. The U of M offers post-graduate studies in several fields; other Manitoba universities have selected post-graduate studies.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Elementary & Kindergarten Teachers (2731)	7245	10%	$20,174	Fair

EMPLOYMENT PROSPECTS TO 1990

The demand for teachers in elementary schools depends largely on the population of school-age children. For several years this population has slowly declined, but the number of teachers per student has increased to maintain the number of teachers at a fairly even level. This trend is expected to continue over the outlook period, resulting in below average opportunities. Best opportunities will be in rural and remote communities. In urban areas, teachers of a second language, arts, and science should have the best opportunities.

MAIN TRAINING ROUTES

Teachers normally are required to have a bachelor of education degree. The Universities of Winnipeg and Brandon provide education programs, St. Boniface College offers teacher training in French.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Secondary School Teachers (2733)	5440	17%	$24,396	Poor

EMPLOYMENT PROSPECTS TO 1990

The secondary school-age population is expected to decline significantly in the outlook period, and an increasing teacher:student ratio is not expected to compensate fully for the decline. Keen competition will occur for most openings. Best opportunities will be in rural and remote communities and in specialties such as second languages, science and arts.

MAIN TRAINING ROUTES

Most secondary teachers have a Bachelor of Education degree. The universities of Manitoba and Winnipeg offer education programs. St. Boniface College offers education training in French.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Other Elementary and Secondary School Teachers (2739)	2035	137%	$14,112	Fair

EMPLOYMENT PROSPECTS TO 1990

These occupations are mostly supply teachers and teachers in private schools. Employment opportunities are expected to be below average due to the declining school-age population. Some private schools require special qualifications (e.g. language, religious beliefs) which will limit the competition expected for most other teaching positions. Part-time and part-year work is common.

MAIN TRAINING ROUTES

Most elementary and secondary teachers have a bachelor degree in education. However, educational qualifications may not be as important for some of these occupations as special qualifications, such as ability in a second language or a particular religious belief.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Community College and Vocational School Teachers (2791)	785	59%	$23,982	Average

EMPLOYMENT PROSPECTS TO 1990

This occupation is expected to have more favourable prospects than the other teaching occupations, with average employment growth. Expansion of career-oriented training courses and programs is expected to continue through the outlook period.

MAIN TRAINING ROUTES

A basic qualification for this occupation ranges from university degree to apprenticeship or extensive experience in the field being taught. The U of W and Red River C.C. cooperatively operate a program to prepare vocational teachers. For some areas, a B.Ed. degree is preferred or required.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Fine Arts Teachers (2792)	945	25%	$19,383	Fair

EMPLOYMENT PROSPECTS TO 1990

Average employment growth expected. Increasing leisure time and disposable income will create demand for teachers of art, music, dance, drama, etc. Keen competition may occur for individual jobs. Part-time work is common.

MAIN TRAINING ROUTES

Professional qualifications are only established through years of work in one's field of expertise. A university education in fine arts can be an advantage in some fields, but in others, such as dance, college is seldom required. B.Ed. degrees are preferred or required for public school teachers.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Physicians & Surgeons (3111)	1570	13%	$50,557	Average

EMPLOYMENT PROSPECTS TO 1990

The outlook for medical doctors is expected to be favourable, especially in rural and remote communities where a general practice would be required. Some specialties such as anesthesiology are currently in strong demand, but overall the supply and demand for physicians and surgeons is expected to remain in balance or even in a slight surplus position.

MAIN TRAINING ROUTES

Medical doctors must be licensed to practise in Manitoba. Medicine may be studied at the U of M after completion of a pre-medicine science degree. Entry into medical schools is limited to the number of available student positions and several applications are normally received for each position.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Nurses, Registered (R.N.) Graduate and Nurses-In-Training (3131)	9035	89%	$16,154	Average/Good

EMPLOYMENT PROSPECTS TO 1990

Favourable employment opportunities expected, although there may be periods of keen competition. Opportunities will occur to replace nurses leaving the labour force. Part-time employment is common and is expected to increase. The best opportunities will be in specialties such as intensive care and surgery, and in general practice in rural and remote communities. There will probably be greater demand for baccalaureate nurses in the future.

MAIN TRAINING ROUTES

Registered nurses may take a two-year course at any of the training hospitals. In Winnipeg or Brandon or at Red River C.C. A bachelor degree in nursing may be obtained after a four-year course at the U of M. Red River C.C. has a program for licensed practical nurses (LPN's) who may elect to take registered nursing training after completion of the LPN course. Psychiatric nurses' training is available at Selkirk Mental Hospital and Manitoba School for Retardates, and Brandon Mental Health Centre.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Registered Nursing Assistants (LPN's) (3134)	1220	n.a.	$12,768	Average

EMPLOYMENT PROSPECTS TO 1990

Employment of nursing assistants is expected to grow as fast as average. Personal care homes throughout the province will provide most opportunities. Part-time work is common and is expected to increase.

MAIN TRAINING ROUTES

A one-year course available at the community colleges or at a training hospital leads to a certificate in nursing (L.P.N.).

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Orderlies and Nursing Attendants (Aides) (3132 and 3135)	5070	-2%	$11,161	Average

EMPLOYMENT PROSPECTS TO 1990

The outlook for nursing aides is favourable, although there may be several qualified applicants applying for any particular job. Part-time employment is common and is expected to grow.

MAIN TRAINING ROUTES

Nursing attendants (nurses' aides and orderlies) normally receive on-the-job training at a hospital or nursing home.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Audiologists and Speech Therapists	90	83%	$24,040	Very Good
Physiotherapists	330		$16,513	
Occupational Therapists (3136/3137/3138)	160		$11,860	

EMPLOYMENT PROSPECTS TO 1990

Specialized medical therapists are expected to have favourable employment opportunities. Part-time work is expected to increase.

MAIN TRAINING ROUTES

Physiotherapy and occupational therapy can be studied at the School of Medical Rehabilitation, U of M. The programs are three years in duration, with one year pre-professional course in arts and science required. Student positions are limited and applications exceed training positions. Training for audiology and speech therapy is not available in Manitoba. Manitoba students attend the University of North Dakota or schools in other provinces.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Nursing, Therapy & Related Assisting Occ. (including Child Care Attendants) (3139)	1380	114%	$13,122	Average

EMPLOYMENT PROSPECTS TO 1990

The rapid growth in this occupation has been in the number of child care attendants. This occupation is expected to grow more rapidly than average. Child care workers with formal training will have the best opportunities. Part-time work is common.

MAIN TRAINING ROUTES

Tech Voc High School offers training in child care. Certificate programs are available at all three community colleges. Red River C.C. also has a two-year diploma course. Degree programs specializing in the area of child care are available at the Universities of Winnipeg and Manitoba.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Pharmacists (3151)	640	19%	$20,203	Average

EMPLOYMENT PROSPECTS TO 1990

Employment opportunities are expected to be about average. Slow growth in the occupation will be balanced by slightly above average replacement demand and a trend towards part-time work.

MAIN TRAINING ROUTES

Pharmacists must have a pharmacy degree and a licence to practice. The U of M offers a four-year program in pharmacy.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Medical Laboratory Technologists & Technicians (3156)	1615	83%	$17,110	Average

EMPLOYMENT PROSPECTS TO 1990

Replacement opportunities are expected to continue for medical laboratory technologists and technicians. Employment will occur in new technologies which will replace old ones.

MAIN TRAINING ROUTES

Most persons in these occupations have taken a course in medical laboratory technology at Red River C.C.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Dental Hygienists & Dental Assistants (3158)	835	111% (est.)	$11,149	Good

EMPLOYMENT PROSPECTS TO 1990

Employment prospects are favourable for dental hygienists, chair-side and expanded duty dental assistants. Increased use of dental insurance plans will create greater demand for dental services. Part-time work may be common for dental assistants but most dental hygienists are employed full-time.

MAIN TRAINING ROUTES

Courses in chair-side dental assisting are available at Tech Voc High School and the Community Colleges. The U of M offers a two-year diploma in dental hygiene.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Product and Interior Designers (3313)	640	43%	$17,450	Average

EMPLOYMENT PROSPECTS TO 1990

This occupation is expected to grow faster than average, although new entrants will face keen competition for jobs. Within this group, industrial product designers will have slower growth than interior design, display work, floral arranging and other jobs which often provide part-time or piece-work opportunities. Part-time work is quite common.

MAIN TRAINING ROUTES

Artistic talent is a basic qualification for design occupations. Industrial designers may have a background in engineering, technology, or fine arts. Red River C.C. has a course in design and drafting technology. Several high schools provide courses in design and commercial art. The U of M offers a four-year program in interior design, and a three-year bachelor of fine arts program.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Advertising and Illustrating Artists (3314) **(Graphic Artists)**	600	56%	$14,932	Average

EMPLOYMENT PROSPECTS TO 1990

Faster than average growth expected for these occupations, although keen competition will exist. Most employment opportunities will be in the printing and publishing industry. Some artists engage in freelance work.

MAIN TRAINING ROUTES

The foremost qualification for this occupation is artistic talent. Commercial art can be studied at several secondary schools and Red River and Assiniboine C.C.'s.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Musicians & Singers (3332)	420	24% (est.)	$12,151	Fair

EMPLOYMENT PROSPECTS TO 1990

Growth expected to be as fast as average, but keen competition expected for any openings. Because performances often run for limited times, there are many opportunities for qualified performers during the year. Part-time and part-year work is common.

MAIN TRAINING ROUTES

A musical talent is required for professional singing careers. Formal training is often necessary. Experience is often obtained through unpaid work in amateur productions. Music can be studied through private lessons, at several secondary schools, and at the three Manitoba universities.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Writers and Editors (3351)	900	64%	$19,665	Average

EMPLOYMENT PROSPECTS TO 1990

Faster than average growth expected due to increasing demand for information of all kinds throughout the province. However, keen competition is expected for salaried jobs. Freelance writing offers many opportunities. Writers with a specialized interest area will have the best opportunities.

MAIN TRAINING ROUTES

Specialist writers can have a background in almost any area, combined with a talent for using language. A course in creative communications is available at Red River C.C., and languages can be studied at the three universities and St. Boniface College.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Coaches, Trainers and Instructors, Sports and Recreation (3370)	585	66% (est.)	$15,663	Average

EMPLOYMENT PROSPECTS TO 1990

Sports programs will likely expand and become more intensive, thus creating better than average opportunities for coaches and instructors. However, keen competition is expected for paid positions. Part-time and part-year work is common.

MAIN TRAINING ROUTES

Extensive knowledge of sports theory and practice is required for coaching positions. Trainers must have experience in basic first aid for sports injuries. Much of this background can be obtained by participating in amateur sports for no pay. The U of M has a four-year program in Physical Education. The U of W offers courses in recreation and athletic studies, and the U of Brandon has a one-year physical education program which certified teachers may enter.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Attendants, Sports & Recreation (3375)	390	56%	$14,391	Average

EMPLOYMENT PROSPECTS TO 1990

Employment of attendants in sports and recreation will grow faster than average as personal income and leisure time increase. Competition will be keen because of the large number of persons interested in sports activities. Part-time and part-year work is very common.

MAIN TRAINING ROUTES

Attendants generally are trained on-the-job.

SOC 4111 to 6191:

CLERICAL/SALES/SERVICE

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Secretaries & Stenographers (4111)	11,300	46%	$12,124	Average

EMPLOYMENT PROSPECTS TO 1990

Employment of secretaries is expected to grow faster than average because of increased paperwork and a need for office skills in a greater number of offices. Demand for stenographers will continue to decline. Keen competition is expected for secretarial positions. Technological advances will not significantly affect the demand for secretaries but may change the way work is done. Temporary and part-time secretarial work is quite common and expanding.

MAIN TRAINING ROUTES

Most secondary schools and the community colleges provide courses and programs in secretarial skills. Red River C.C. also offers courses designed for legal and medical secretaries. Experience in typing or clerical jobs may be adequate qualifications.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Typists and Clerk-Typists (4113)	4425	-15%	$11,172	Fair

EMPLOYMENT PROSPECTS TO 1990

Employment of typists and clerk-typists expected to grow as fast as average as businesses expand. Job turnover is fairly high. In spite of many job openings, keen competition is expected. Skills in operating word processors may be required (see 4143-EDP Equipment Operators). Part-time and temporary employment is very common.

MAIN TRAINING ROUTES

Most high schools and the community colleges provide typing and clerical skills courses.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Supervisors: Bookkeeping and Account Recording (4130)	1125	119%	$16,250	Fair

EMPLOYMENT PROSPECTS TO 1990

Employment expected to grow as fast as average. The size of an office usually determines the need for a clerical supervisor, and as small businesses grow they will require more clerical staff. The expanding use of computers in accounting is expected to affect the way work is done, and will limit growth of employment. The large number of qualified persons will result in keen competition for jobs.

MAIN TRAINING ROUTES

Most supervisors reach their position by promotion from clerical jobs after extensive experience. Supervisory skills are usually learned on-the-job.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Bookkeepers and Accounting Clerks (4131)	16,365	70%	$12,692	Average

EMPLOYMENT PROSPECTS TO 1990

Growth expected to be as fast as average. Keen competition is expected due to the large number of qualified applicants. The expanding use of computers for financial management and accounting will mean fewer accounting clerks per office, but the number of offices will continue to increase. Part-time work is very common and is increasing. Turnover is fairly high.

MAIN TRAINING ROUTES

Most high schools and the community colleges offer courses in business skills including bookkeeping. Programs which include some skills in data processing and computer operation are most useful.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Cashiers and Tellers (4133)	8600	93%	$10,332	Average

EMPLOYMENT PROSPECTS TO 1990

Employment of cashiers and tellers has expanded rapidly, largely due to an increase in part-time work. Growth will continue, but keen competition may be expected. Electronic equipment will speed up work and limit the growth of jobs. Turnover is fairly high.

MAIN TRAINING ROUTES

Most cashiers and tellers are trained on-the-job. A high school diploma is usually a basic requirement.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Insurance, Banks and Other Finance Clerks (4135)	1535	66%	$12,022	Average

EMPLOYMENT PROSPECTS TO 1990

Clerical jobs in banks and insurance companies expected to grow as fast as average as the amount of paperwork increases. Electronic information systems will change the way work is done as well as slow the increase in jobs. Turnover is fairly high.

MAIN TRAINING ROUTES

Most training for these positions is on-the-job. The basic requirement is usually a high school diploma.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Electronic Data-Processing Equipment Operators (4143)	3310	132%	$12,565	Average

EMPLOYMENT PROSPECTS TO 1990

This group includes keypunch operators, computer and peripheral equipment operators and word processor operators. While keypunch operators are expected to decline, the number of computer and word processor operators will increase about as fast as average. As computer systems expand, the need for data-entry operators and other peripheral equipment operators is expected to rise. Part-time and temporary work is fairly common. (See Appendix A.)

MAIN TRAINING ROUTES

Training in operating electronic data-processing equipment can be obtained in several high schools, the community colleges, and private trade schools. Employers often select persons from current staff in clerical and typing positions for training as data-entry operators, keypunch operators and word processor operators.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Shipping & Receiving Clerks,	4055	19%	$13,838	Fair
Stock Clerks (4153/4155)	3920	62%	$13,692	Fair

EMPLOYMENT PROSPECTS TO 1990

This occupational group is expected to have slower than average employment growth in the outlook period. Computers are increasingly being used to control records of stocks and flows of material. Moreover, the wholesale and retail trade sector which employs most of these workers is not expected to increase employment as rapidly as some other sectors. Turnover is fairly high. Part-time and temporary work are fairly common.

MAIN TRAINING ROUTES

Most material recording clerks are trained on-the-job. A high school diploma is usually a basic requiremnt. Some knowledge of computer systems will be useful. High school courses, private trade schools and community colleges provide training in clerical and computer skills.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Library and File Clerks (4161)	2190	16%	$11,111	Fair

EMPLOYMENT PROSPECTS TO 1990

Employment of library and file clerks expected to grow as fast as average. Businesses and government will continue to need documentation clerks in spite of electronic information storage and retrieval systems. Turnover is fairly high. Part-time work is common. Keen competition is expected.

MAIN TRAINING ROUTES

Most library and file clerks have some high school education and may have no prior work experience.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Receptionists and Information Clerks (4171)	3430	68%	$10,263	Average

EMPLOYMENT PROSPECTS TO 1990

Employment of receptionists and information clerks expected to grow faster than average in the outlook period. Technology will have a limited effect where personal contact is important. Clerks may be required to use computer terminals to retrieve information. Turnover will create additional opportunities. Part-time work is quite common. Keen competition is expected.

MAIN TRAINING ROUTES

Many receptionists have no formal training and learn on-the-job. Basic requirements are some high school education and ability to meet the public.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Mail and Postal Clerks (4173)	1860	20%	$17,121	Poor

EMPLOYMENT PROSPECTS TO 1990

Growth of employment in this occupation will be limited almost entirely to private businesses and government (i.e., not Canada Post). Increased automation will continue to reduce opportunities in the Post Office. Over a longer period, the increased use of electronic communication may reduce the quantity of mail handled. Replacement demand will be a more important factor than growth. Part-time work is quite common.

MAIN TRAINING ROUTES

Mail clerks are trained on-the-job, often having no prior work experience.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Telephone Operators (4175)	1275	-23%	$11,159	Poor

EMPLOYMENT PROSPECTS TO 1990

The number of telephone operators has been declining because of more efficient communications equipment. Little change in employment levels is expected in the outlook period. Replacement demand will result in a few opportunities. Part-time work is fairly common.

MAIN TRAINING ROUTES

Telephone operators receive on-the-job training, often having had no prior work experience. A high school diploma may be required.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Travel Clerks, Ticket, Station and Freight Agents (4193)	1040	39%	$16,009	Average

EMPLOYMENT PROSPECTS TO 1990

Employment of travel and ticket agents is expected to increase as fast as average as business activity, personal income and leisure time increase. Movement of freight is also expected to increase, resulting in average opportunities for freight agents. Keen competition is expected for jobs in the travel industry.

MAIN TRAINING ROUTES

Training for travel agents is available at private trade schools. Freight agents usually receive on-the-job training after experience in other clerical work.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
General Office Clerks (4197)	6320	34%	$12,751	Fair

EMPLOYMENT PROSPECTS TO 1990

Employment of general office clerks is expected to grow as fast as average. Replacement demand due to turnover will be fairly high. However, keen competition for openings will exist because the skill level is fairly low and many applicants are qualified. Part-time work is quite common.

MAIN TRAINING ROUTES

High school education is required for most general clerical jobs. Skills in typing, record-keeping, and basic accounting can be studied at high schools, community colleges, and private trade schools.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Supervisors: Sales Occupations, Commodities (5130)	5405	1%	$15,736	Fair

EMPLOYMENT PROSPECTS TO 1990

Employment of sales supervisors is expected to grow very slowly in the outlook period. Larger stores which require supervisors have a large staff which can he promoted, resulting in keen competition for any jobs.

MAIN TRAINING ROUTES

Most supervisors have extensive experience as sales clerks before promotion to supervisory positions.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Technical Sales (5131)	355	56%	$21,298	Very Good

EMPLOYMENT PROSPECTS TO 1990

Favourable employment prospects are expected in almost every line of sales requiring technical knowledge. Growth of markets for industrial, electronic and other equipment depends largely on the efforts of technical sales persons.

MAIN TRAINING ROUTES

Most technical sales workers have a background in engineering or technology, or extensive experience in the use of a particular type of equipment. For example, an electronic technologist might become a data-processing sales representative. Marketing skills are normally learned on-the-job and are often related to individual talent rather than training. A commercial/industrial sales program is available at Red River C.C.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Commercial Travellers (5133)	4190	75%	$21,391	Average

EMPLOYMENT PROSPECTS TO 1990

Employment of workers in wholesale trade sales is expected to increase as fast as average. Persons with good product knowledge and sales skills will have the best opportunities.

MAIN TRAINING ROUTES

A background in engineering, sciences, or technical training is a critical skill which can be gained usually by experience or by on-the-job training. A commercial/industrial sales program is available at Red River C.C.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Sales Clerks and Salespersons, Commodities (5135)	21,725	40%	$13,443	Average

EMPLOYMENT PROSPECTS TO 1990

Employment is expected to grow as fast as average as the number of retail outlets increases. Small stores will offer the greatest number of opportunities. Replacement demand due to turnover will create many opportunities. Part-time work is quite common.

MAIN TRAINING ROUTES

Most sales clerks have no formal training and are hired on the basis of experience. Part-time jobs are often given to students still in high school.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Service Station Attendants (5145)	1360	17%	$9,762	Fair

EMPLOYMENT PROSPECTS TO 1990

Employment expected to grow very slowly in the outlook period. The number of service stations seems to have stopped increasing and fewer of them now require full service attendants. Replacement demand due to turnover will create most opportunities. Part-time work is very common.

MAIN TRAINING ROUTES

Service station attendants are often hired with no previous experience or special training. An interest in motor vehicles is an asset.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Insurance Sales (5171)	1725	61%	$19,166	Average

EMPLOYMENT PROSPECTS TO 1990

Employment is expected to grow as fast as average as the population and personal income increase. Replacement demand due to turnover will create several opportunities.

MAIN TRAINING ROUTES

Most insurance companies prefer university graduates for sales positions. On-the-job training is provided by agencies and insurance companies.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Real Estate Sales (5172)	1810	133%	$21,807	Average

EMPLOYMENT PROSPECTS TO 1990

Employment of real estate sales occupations is expected to grow as fast as average as the adult population increases and personal income rises. Periods of slower economic activity will reduce opportunities.

MAIN TRAINING ROUTES

Real estate agents must pass an examination and be licensed to operate in Manitoba. Persons entering the occupation receive training from the Manitoba Real Estate Association while employed by a licensed agency. Correspondence courses are available for those residing outside of Winnipeg.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Buyers, Wholesale and Retail Trade (5191)	450	44%	$20,450	Fair

EMPLOYMENT PROSPECTS TO 1990

Employment of buyers is expected to grow very slowly in the outlook period. Large companies in wholesale and retail trade, which are the major employers, are not expected to increase rapidly in number.

MAIN TRAINING ROUTES

Knowledge of the merchandise and experience in retailing are important qualifications. Training on-the-job is the normal route. Courses in marketing and sales may be useful. Red River C.C. has a program in commercial/industrial sales and the universities provide marketing courses as part of their business administration programs.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Fire-Fighting (6111)	1235	25%	$22,960	Poor

EMPLOYMENT PROSPECTS TO 1990

Slow growth is expected for fire-fighters, as local governments balance the need for financial restraint with the need for increased fire protection. Keen competition is expected because many people are attracted to this work.

MAIN TRAINING ROUTES

Grade 11 education and physical fitness are the basic qualifications for the job. The waiting list for openings is lengthy even after entrance requirements are met. Training is received on-the-job.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Police Officers and Detectives, Government (6112)	2465	75%	$24,137	Average

EMPLOYMENT PROSPECTS TO 1990

Employment of police officers is expected to grow as fast as average in spite of the need for financial restraint. Smaller communities will probably have less competition for openings than Winnipeg, where the number of applicants is high.

MAIN TRAINING ROUTES

Most police officers in Manitoba have received training through the Royal Candian Mounted Police or the Winnipeg Police Department. Grade 11 or Grade 12 high school and physical fitness are required for entrance. Applicants may find a long waiting list for entrance.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Guards and Related Security Occupations (6115)	2515	59%	$14,772	Very Good

EMPLOYMENT PROSPECTS TO 1990

Employment of guards in correctional institutions and security services is expected to grow faster than average. Growth will be related to an increasing prison population and increasing concern over crime and vandalism. Part-time work is fairly common.

MAIN TRAINING ROUTES

Most guards have some high school education and must be physically fit. On-the-job training is given to new entrants.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Commissioned Officers/ and Other Ranks, Armed Forces (6116/7)	900/2640 -	12%/-40%	$28,361/$16,752	Fair

EMPLOYMENT PROSPECTS TO 1990

Little growth is expected in armed forces employment in the outlook period. Opportunities in the reserves should be favourable for part-time and part-year work.

MAIN TRAINING ROUTES

University or community college education is required for officers in the armed forces. This may be obtained at any civilian university, or at military colleges in other provinces. High school graduation is the preferred entry requirement for non-commissioned ranks.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Supervisor: Food and Beverage Preparation and Service (6120)	2245	45%	$13,996	Average

EMPLOYMENT PROSPECTS TO 1990

Employment is expected to grow slowly because large restaurants do not open as frequently as small ones. Replacement demand will create opportunities due to turnover.

MAIN TRAINING ROUTES

Most supervisors have several years of experience in food and beverage service occupations. Most supervisors have several years of experience in food and beverage service occupations. A certificate course in fast food supervision is available at Red River C.C.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Chefs and Cooks (6121)	5950	83%	$10,174	Very Good

EMPLOYMENT PROSPECTS TO 1990

Employment of chefs and cooks is expected to increase faster than average due to expanding restaurant trade. The best opportunities will be in small restaurants and specialty food services (e.g., fast food, ethnic food). Part-time work is fairly common, especially for fast food cooks.

MAIN TRAINING ROUTES

Although many cooks have advanced from unskilled positions such as kitchen helper, employers are more often requiring formal training these days. Several high schools provide cooking courses and the community colleges have commercial cooking and chef training programs. Training can be a very short period for fast food cooks or a lengthy apprenticeship for master cooks and chefs.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Bartenders (6123)	1125	103%	$10,338	Average

EMPLOYMENT PROSPECTS TO 1990

Employment of bartenders is expected to grow faster than average due to an increasing demand for food and beverage services. However, many persons are attracted to this job and there may be keen competition for positions in expensive restaurants and hotel bars. Part-time work is fairly common.

MAIN TRAINING ROUTES

Most bartenders learn on-the-job but must have a good knowledge of drink preparation. Evening courses on bartending are offered at various places such as high schools, community centres, community colleges, private trade schools, etc.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Food and Beverage Serving (6125)	10,845	59%	$8,239	Very Good

EMPLOYMENT PROSPECTS TO 1990

Waiters and waitresses are expected to increase faster than average due to increased demand for restaurant services. Replacement demand due to turnover is expected to create even more opportunities. Best opportunities will be in fast food and specialty restaurants. Part-time work is very common.

MAIN TRAINING ROUTES

Most waiters and waitresses are trained informally on-the-job. European-style food waiting is sometimes learned in an apprenticeship program which takes a person from kitchen helper to waiters' assistant and up to head waiter or maitre d'hotel.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Lodging Cleaners, Except Private Household (6133)	1315	134%	$8,518	Very Good

EMPLOYMENT PROSPECTS TO 1990

Employment of hotel and motel room cleaners is expected to grow faster than average as accommodation services increase. Turnover will create many openings. Part-time and part-year work is quite common, depending on the size of establishment and the seasonality of the job.

MAIN TRAINING ROUTES

No formal training is required for these positions as on-the-job experience is usually adequate. R.B. Russell Vocational School provides a program in institutional and custodial services.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Housekeepers and Servants (6142)	1155	n.a.	$5878	Average

EMPLOYMENT PROSPECTS TO 1990

Employment of domestic servants is expected to increase about as fast as average as more women join the labour force and personal incomes rise. Much of the work in these occupations is part-time.

MAIN TRAINING ROUTES

No formal training is usually required as personal cleaning habits and on-the-job experience are normally adequate.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Barbers and Hairdressers (6143)	2575	12%	$11,704	Average

EMPLOYMENT PROSPECTS TO 1990

Employment is expected to increase about as fast as average, with most growth in hairdressing. Replacement demand will create many opportunities, as turnover is fairly high. Best opportunities will be in rural communities. Part-time work is fairly common.

MAIN TRAINING ROUTES

Several high schools offer programs in cosmetology or hairdressing. Several private schools offer training in hairdressing, manicure, and make-up. A barbering course is available at Red River C.C.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Child-Care Occupations (6147)	1740	88%	$7,033	Average

EMPLOYMENT PROSPECTS TO 1990

Employment of child-care workers in homes or institutions is expected to increase as fast as average as more women enter the labour force and personal incomes rise. Part-time work is common.

MAIN TRAINING ROUTES

Several high schools provide courses in family and community services, and in health and child care services. The community colleges offer programs in child-care services. Child-care workers in institutions will soon be required to be licensed. Formal training is usually not required for babysitting in homes, as personal experience is usually adequate.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Laundering and Dry Cleaning (6162)	780	14%	$9,687	Poor

EMPLOYMENT PROSPECTS TO 1990

Employment of these occupations is expected to show little growth in the outlook period. The widespread use of easy-care fabrics has resulted in limited growth in the laundry and dry cleaning industry.

MAIN TRAINING ROUTES

Training for these occupations is usually on-the-job. R.B. Russell High School provides some training.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Janitors, Charworkers and Cleaners (6191)	9855	22%	$11,561	Very Good

EMPLOYMENT PROSPECTS TO 1990

Employment of janitors and cleaners is expected to increase slightly faster than average. These jobs are found in every industry. Many jobs are part-time, and turnover is quite high.

MAIN TRAINING ROUTES

No formal training is normally required. R.B. Russell Vocational School provides courses in institutional and household services, and custodial services.

SOC 7113/5/9 to 7717/8:

PRIMARY OCCUPATIONS

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Livestock Farmers	2050	n.a.(-12% for all farming occupations)	$11,826	Poor
Crop Farmers	5680		$11,486	
Farmers, n.e.c. (7113/5/9)	15325		$10,642	

EMPLOYMENT PROSPECTS TO 1990

The number of livestock farmers has been declining due to the increasing cost of buying and operating farms. Opportunities can vary with changes in output and input prices, but in the long run a continued decline is expected. Almost all opportunities will be created by the retirement of farmers.

MAIN TRAINING ROUTES

As farm owner/operator, one factor in entering the occupation is the cost of purchasing or renting land, equipment and stock. Most farmers have years of experience as a farm worker. The U of M has short courses, a two-year diploma course and a four-year degree program in Agriculture. Assiniboine C.C. has several farming courses, and Crocus Plains and Steinbach Regional Secondary Schools have courses in natural sciences and farm management.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Livestock Farm Workers (7183)	1975	n.a.(-12% for all farming occupations)	$8,791	Fair

EMPLOYMENT PROSPECTS TO 1990

The number of livestock workers has been declining as the equipment used to care for animals has become more efficient. Over the outlook period opportunities may vary between poor and average, as the prices of livestock and feed determine the level of farming activity. Most jobs will be created by replacement demand. Little seasonal variation will occur.

MAIN TRAINING ROUTES

Experience in handling farm animals is the primary requirement for livestock workers. Assiniboine C.C. offers a short course in livestock farming.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Crop Farm Workers (7185)	2320	n.a. (-12% for all farming occupations)	$8,479	Fair
Farm Machinery Operators (7197)	1065		$9,430	

EMPLOYMENT PROSPECTS TO 1990

Although total employment is not expected to change, job openings will occur because of the seasonal nature of the work. Most job openings occur during the spring planting and fall harvesting seasons.

MAIN TRAINING ROUTES

Many workers in these farming occupations are family members. Experience in cultivating and harvesting crops is the primary entrance requirement.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Nursery and Related Workers (7195)	2590	35%	$13,592	Average

EMPLOYMENT PROSPECTS TO 1990

Opportunities will be favourable for groundskeepers and landscape workers. Growth is expected in many industries that employ these workers. Most work is seasonal.

MAIN TRAINING ROUTES

Experience in low skilled jobs helping landscapers and nursery workers is the main entry route. Courses in horticulture and landscaping are available at R.B. Russell Vocational School. The U of M Agriculture and Architecture faculties provide advanced courses in both areas.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Net, Trap and Line Fishing (7313)	665	247%	$11,631	Fair

EMPLOYMENT PROSPECTS TO 1990

This was one of the fastest growing occupations in Manitoba during the early 1970's as the inland fishery industry grew. New opportunities are expected to be scarce, but replacement demand will create job openings. Work is very seasonal and is largely concentrated in northern communities.

MAIN TRAINING ROUTES

Experience with a fishing crew is the best training route.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Forestry Conservation (7511)	220	20%	$18,483	Fair

EMPLOYMENT PROSPECTS TO 1990

Permanent jobs as forest conservation officers will be limited. Many of the forest conservation jobs involve fire fighting in remote areas, in summers only. Opportunities for these jobs will be lower than average, although some years may be better than others.

MAIN TRAINING ROUTES

Work experience in tree nurseries or fire-fighting crews is a good training background. Swan Valley Regional High School provides a program in resources and environmental management. The Universities of Brandon and Winnipeg offer courses in environmental studies. Forestry science is offered in several schools in other provinces.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Timber Cutting (7513)	415	48%	$15,386	Fair
Log Hoisting, Sorting and Moving (7517)	140	183%	$18,660	Fair

EMPLOYMENT PROSPECTS TO 1990

Employment of timber cutters, loggers and log handling machine operators is not expected to grow during the outlook period, but replacement demand will create some opportunities. Most opportunities will be seasonal and in northern or remote communities.

MAIN TRAINING ROUTES

Experience in labouring and semi-skilled positions for logging companies is the primary training route.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Rock and Soil Drilling (7713)	645	-19%	$23,955	Poor

EMPLOYMENT PROSPECTS TO 1990

Employment of rock and soil drillers is expected to remain at the same level until construction begins on the hydro generating station. Most drillers are employed in mines, which are expected to provide little employment growth. Replacement demand due to turnover will result in almost all opportunities.

MAIN TRAINING ROUTES

Experience at unskilled helper and labourer jobs is the usual training route for these occupations.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Mining and Quarrying; Cutting, Handling and Loading; Labouring and Other Elemental Work (7717/8)	775/545	6%/25%	$21,353/$19,620	Fair

EMPLOYMENT PROSPECTS TO 1990

Employment of these mining occupations is not expected to grow in the outlook period. Replacement demand due to turnover will continue to cause most job openings.

MAIN TRAINING ROUTES

Some of these jobs require no training. On-the-job experience in labouring positions is the main entry route to the higher-skilled jobs.

SOC 8110 to 8595:

PRODUCTION OCCUPATIONS

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Mineral Ore Treating (8110 to 8119)	555	38%	$21,377	Fair

EMPLOYMENT PROSPECTS TO 1990

Employment in these occupations is expected to show no change. Replacement demand due to turnover will create opportunities, largely in labouring positions. Most mills and smelters are located in northern communities.

MAIN TRAINING ROUTES

Training for skilled positions such as equipment operators normally takes place in a helper or labourer position.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Foreman/woman: Metal Processing (8130)	370	105%	$22,790	Poor

EMPLOYMENT PROSPECTS TO 1990

Although employment of metal processing supervisors increased rapidly during the 1970's, growth is expected to be very slow in the outlook period. The number of foundries, metal refineries and smelters is not expected to increase significantly for several years, and expansion of existing facilities will be slow.

MAIN TRAINING ROUTES

Several years of experience in metal processing occupations are normally required for foreman/woman occupations.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Moulding, Coremaking and Metal Casting (8137)	310	0%	$15,766	Fair

EMPLOYMENT PROSPECTS TO 1990

Employment is expected to increase more slowly than average. The demand for foundry products is expected to increase slowly. Because this is a small and highly-skilled occupation, there may be periods when skilled workers are in high demand.

MAIN TRAINING ROUTES

Skilled jobs require from two to four years of training under an experienced worker. Less skilled machine operating jobs require from one to four years of experience, while some jobs require only one to four weeks of experience as a labourer in a foundry.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Clay, Glass, and Stone Processing, Forming (8150 to 8159)	445	5%	$17,860	Fair

EMPLOYMENT PROSPECTS TO 1990

Employment is expected to show no growth in the outlook period. Replacement demand will create a few opportunities. Glass manufacturing and construction companies will offer the best opportunities.

MAIN TRAINING ROUTES

Experience in unskilled labourer and helper positions is the primary requirement.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Chemicals, Petroleum, Rubber and Plastic Processing (8160 to 8179)	860	66%	$16,395	Poor

EMPLOYMENT PROSPECTS TO 1990

No employment growth is expected in these occupations for the outlook period. Some of the highly skilled occupations are very small and could have occasional periods of high demand.

MAIN TRAINING ROUTES

Experience in low-skilled labourer and helper positions is the primary requirement for advancement to skilled and supervisory positions in these occupations. A two- to four-year training period may be required for the highly skilled positions.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Baking and Confectionery Making (8213)	1120	19%	$13,932	Fair

EMPLOYMENT PROSPECTS TO 1990

Employment of bakers and cake makers is expected to have slower than average growth in the outlook period. Job opportunities will arise because of replacement demand. Most jobs will be in smaller bakeries.

MAIN TRAINING ROUTES

Several high schools have courses in food preparation, which includes baking. Red River C.C. has a five-month course in commercial baking, and Keewatin offers a basic cooking course. Experience as a baker's helper may be adequate training.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Slaughtering and Meat Cutting, Canning, Curing and Packing (8215)	2455	22%	$15,886	Poor

EMPLOYMENT PROSPECTS TO 1990

Employment of meat cutters and packers is expected to show no growth to 1987. Fewer food stores will employ meat cutters because of the trend towards centralized meat cutting for several stores, and pre-cut meats obtained from packing plants.

MAIN TRAINING ROUTES

Many meat cutters and packers learn their skills through on-the-job experience. Red River C.C. offers a course in meat cutting.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Labouring/Occupations n.e.c.: Food & Beverage Processing (8228/9)	585/615	-9%/30%	$12,551/$15,171	Poor

EMPLOYMENT PROSPECTS TO 1990

The number of food and beverage processing labourers is expected to continue declining as better technology is applied. Machine operators with a slightly higher skill level will be in greater demand, but productivity increases will limit growth.

MAIN TRAINING ROUTES

Most labourers in food and beverage processing require no prior experience or training. Experience in labouring is required to advance to higher skilled jobs.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Pulp and Papermaking (8250 to 8259)	620	79%	$21,579	Fair

EMPLOYMENT PROSPECTS TO 1990

The future of occupations in pulp and papermaking is uncertain, as the manufacturers of pulp and paper products are going through a period of rationalization - some plants are closing down, others are modernizing operations, etc. A decline in these occupations is expected because of productivity improvements. Replacement demand will create few opportunities because of company policy of laying off through attrition. Most jobs are in small communities.

MAIN TRAINING ROUTES

Highly skilled papermaking occupations require from two to four years of on-the-job training. Some jobs require from one to six months experience. Labouring positions are open to inexperienced workers.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Tool and Die Makers (8311)	165	17%	$16,269	Excellent

EMPLOYMENT PROSPECTS TO 1990

Employment growth in this occupation is expected to be below average. Replacement demand will probably be more important as a source of job openings. Although this is a small occupation, the high skill level makes tool and die makers indispensable to metal fabricating companies, and demand may be very strong at times. Opportunities should be excellent for properly trained persons.

MAIN TRAINING ROUTES

Tool and die making is an apprenticeable trade. A four-year program of on-the-job experience and classroom training is involved. Some tool and die makers have advanced from skilled machining positions.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Machinist and Machine Tool Setting-up (8313)	1980	46%	$17,615	Average

EMPLOYMENT PROSPECTS TO 1990

Growth of employment in these occupations is expected to be slower than average. Replacement demand will be a more important source of job openings. Because the skill level involved in these occupations is high, there may be periods of more favourable opportunities when metal manufacturers cannot find enough qualifed workers.

MAIN TRAINING ROUTES

Machining is an apprenticeable trade in Manitoba. A four-year program of on-the-job experience and classroom training is involved. Some machinists advance from semi-skilled machine operating occupations after several years of experience.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Machine-Tool Operators (8315)	560	-23%	$14,857	Fair

EMPLOYMENT PROSPECTS TO 1990

Employment of machine tool operators is expected to decline slightly in the outlook period due to a long term trend towards use of numerical control machinery which can do the tasks of several operators. There may be periods of more favourable opportunities if metal manufacturing has a very fast growth in output.

MAIN TRAINING ROUTES

Several high schools provide courses in metal technology or machine shop practice. The community colleges have programs in machine shop practice. Experience as a machine shop helper or labourer may be adequate qualification.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Sheet Metal Workers (8333)	1185	18%	$17,397	Fair

EMPLOYMENT PROSPECTS TO 1990

Employment is expected to have below average growth, with most new jobs in construction. Replacement demand will be the main source of job openings in manufacturing.

MAIN TRAINING ROUTES

Sheet metal work is an apprenticeable trade in Manitoba. A four-year program combines on-the-job experience and classroom instruction. Courses in sheet metal work are available at Assiniboine and Red River C.C's and several high schools offer courses in metal crafts. Experience in low skilled jobs or labouring in metal manufacturing shops are sometimes adequate for jobs in manufacturing.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Welding and Flame Cutting (8335)	3760	69%	$16,024	Average

EMPLOYMENT PROSPECTS TO 1990

Average employment growth is expected and replacement demand should be fairly strong. Opportunities will exist in many industries which require metal fabrication and maintenance, and in small repair shops throughout the province.

MAIN TRAINING ROUTES

Welding courses are available at several high schools and the community colleges. Industrial welding is an apprenticeable trade. A three-year course combining on-the-job experience with classroom instruction prepares welders for work to very high standards.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Boilermakers, Platers and Structural Metal Workers (8337)	190	35%	$19,077	Average

EMPLOYMENT PROSPECTS TO 1990

Employment is expected to increase slightly slower than average. This occupation is quite small and demand can strengthen very quickly. However, periods of slow industrial construction may mean unemployment for some boilermakers.

MAIN TRAINING ROUTES

Boilermaking is an apprenticeable trade in Manitoba. A 3-year course combines on-the-job experience with classroom training. Several years of experience as a boilermaker's helper may be adequate qualification.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Wood Machining (8350 to 8359)	435	16%	$13,678	Fair

EMPLOYMENT PROSPECTS TO 1990

Employment is expected to show no growth in the outlook period. Most of these occupations are involved in wood furniture and sash and door manufacturing. Demand for these products will pick up as residential construction increases, but existing employment levels will probably be adequate to meet the demand.

MAIN TRAINING ROUTES

Most of these occupations require a short period of on-the-job training. Labourers and helpers often advance with experience. Courses in woodworking are available at several secondary schools and the community colleges.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Motor Vehicle Fabricating and Assembling (8513)	770	160%	$12,281	Fair

EMPLOYMENT PROSPECTS TO 1990

Stable employment levels are expected in these occupations, but replacement demand will create several openings. Most of these jobs are in bus manufacturing.

MAIN TRAINING ROUTES

On-the-job training is normally provided for these occupations. Experience in labouring and helper positions is usually adequate.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Aircraft Fabricating and Assembling (8515)	310	400%	$15,090	Fair

EMPLOYMENT PROSPECTS TO 1990

Activity in aircraft fabricating may be very brisk for short periods, but is very dependant on Manitoba firms obtaining contracts for assembly and maintenance. Employment levels may very considerably. Replacement demand will be steady.

MAIN TRAINING ROUTES

Aircraft assemblers can be trained in a short period on-the-job. Experience as a labourer, helper, or assembler in another industry is a useful qualification.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Industrial, Farm, Construction and Other Mechanized Machinery Fabricating and Assembling (8523)	710	217%	$15,086	Fair

EMPLOYMENT PROSPECTS TO 1990

Employment levels may vary considerably with the level of activity in manufacturing of farm machinery. Steady replacement demand is expected.

MAIN TRAINING ROUTES

Experience in unskilled labouring and helper positions is usually adequate training for these positions.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Fabricators and Assemblers; Electrical and Related Equipment (8531)	705	64%	$13,925	Average

EMPLOYMENT PROSPECTS TO 1990

Employment growth in these occupations is expected to be almost as fast as average. Most of these jobs are in manufacturing of electrical and electronic products, which are expected to experience an increase in demand.

MAIN TRAINING ROUTES

Assembly positions normally are filled by inexperienced workers, with training provided on-the-job. Several high schools have courses in an electrical/electronics program.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Electrical Equipment Installing and Repairing Occupations, n.e.c. (8533)	1550	76%	$19,105	Very Good

EMPLOYMENT PROSPECTS TO 1990

Average employment growth is expected. Employment occurs in several industries which will be expanding, including manufacturing, trade, construction, transportation, communications and other utilities. Highly skilled industrial electricians are usually in demand even when industrial activity is slow.

MAIN TRAINING ROUTES

Industrial electrician is an apprenticeable trade in Manitoba. Refrigeration and air conditioning mechanic is also apprenticeable. Both programs involve four years of on-the-job experience combined with classroom training. Some electricians learn their trade through years of experience. Courses in electricity are available at several high schools and the community colleges.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Fabricators and Assemblers/Installers and Repairers: Electronic Equipment (8534/8535)	465/340	325%/46%	$12,449/$18,822	Very Good

EMPLOYMENT PROSPECTS TO 1990

Employment in these occupations is expected to grow as fast as average in the outlook period. Increased use of electronic equipment by industry and consumers will create demand for skilled electronics workers.

MAIN TRAINING ROUTES

Assemblers generally receive on-the-job training. Several high schools offer basic courses in electronics, and the community colleges have programs such as electronic technology, telecommunications, instrumentation technology, and domestic electronics. Highly skilled repairers must be prepared to take continual upgrading courses as the technology changes.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Radio and Television Repairers (8537)	390	-8%	$14,656	Average

EMPLOYMENT PROSPECTS TO 1990

Employment of service technicians is expected to increase about as fast as average as the number of television sets, video games, home computers, stereos and other consumer electronics equipment increases. Opportunities will exist throughout the province.

MAIN TRAINING ROUTES

Courses in basic electronics are available at several high schools. Radio and television repair can be studied at Assiniboine and Red River C.C.'s.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Cabinet and Wood Furniture Makers (8541)	1105	98%	$12,688	Fair

EMPLOYMENT PROSPECTS TO 1990

Although employment grew fairly rapidly in the 1970's, no employment growth is expected during the outlook period. Replacement demand will create several opportunities, however. Highly skilled cabinet makers should have little difficulty finding employment.

MAIN TRAINING ROUTES

Experience in carpentry and/or woodworking is required for cabinet maker positions. Carpentry is an apprenticeable trade in Manitoba, with a four-year program combining on-the-job experience and classroom training. Several high schools and the community colleges provide courses in carpentry and woodworking.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Patternmaking, Marking and Cutting: Textile, Fur and Leather Products (8551)	765	10%	$12,781	Fair

EMPLOYMENT PROSPECTS TO 1990

Employment in these occupations is expected to decline slightly because of reduced activity in the clothing industry and improved techniques for marking and cutting materials. If activity in clothing manufacturing should suddenly increase, highly skilled patternmakers and cutters would be in demand.

MAIN TRAINING ROUTES

Skills for these occupations are learned on-the-job through experience. R.B. Russell Vocational School offers a course in apparel construction.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Tailors and Dressmakers (8553)	410	12%	$10,922	Fair

EMPLOYMENT PROSPECTS TO 1990

Employment in this occupation is expected to show very slow growth during the outlook period. Most jobs opening will be in clothing retail stores. Opportunities will also exist for self-employment.

MAIN TRAINING ROUTES

Most high schools offer home economics which include skills in sewing. R.B. Russell Vocational School offers a course in apparel construction. Natural talents are important in this occupation.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Upholsterers (8562)	625	39%	$13,851	Average

EMPLOYMENT PROSPECTS TO 1990

Employment of upholsterers is expected to show little growth during the outlook period. Specialty furniture manufacturing will probably offer the best opportunites. If demand for furniture should suddenly increase, skilled upholsterers would find favourable opportunities.

MAIN TRAINING ROUTES

Red River C.C. offers a course in upholstery.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Sewing Machine Operators Textile and Similar Materials (8563)	5490	25%	$9,007	Fair

EMPLOYMENT PROSPECTS TO 1990

The number of sewing machine operators is expected to decline in the outlook period due to technological change and reduced clothing manufacturing as a result of foreign competition. A high level of replacement demand will exist in this occupation, due to job turnover.

MAIN TRAINING ROUTES

Most high schools offer home economics courses which include skills in sewing. R.B. Russell Vocational School has an apparel construction course. Employers usually train inexperienced workers on-the-job.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Foremen/women: Mechanics and Repairers n.e.c. (8580)	1830	18%	$19,566	Fair

EMPLOYMENT PROSPECTS TO 1990

Employment growth of mechanic's supervisors will be slower than average because, although growth is expected in mechanical occupations, the number of shops requiring supervisors will remain close to the same level. These occupations can be found in almost every industry.

MAIN TRAINING ROUTES

Supervisors are normally promoted from mechanics' jobs after several years of experience.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Motor Vehicle Mechanics and Repairers (including Auto Body Repairers) (8581)	5640	24%	$14,992	Average

EMPLOYMENT PROSPECTS TO 1990

Employment in these occupations is expected to grow steadily at slightly less than the provincial rate. Repairs to motor vehicles are required at a regular rate, even during economic slowdowns. Employment will rise with the number of vehicles. (About 600 to 1,000 of the persons in these occupations are auto body repairers). Some specialties should be in stronger demand than the average - i.e., electronics, exhaust systems, and air conditioning.

MAIN TRAINING ROUTES

Several high schools offer courses in basic mechanics and bodywork. The community colleges also have courses in motor vehicle mechanics and body repair. Apprenticeship programs for mechanics and body repair involve four years of on-the-job experience and classroom training. Many employers provide informal on-the-job training.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Aircraft Mechanics and Repairers (8582)	745	-3%	$17,624	Fair

EMPLOYMENT PROSPECTS TO 1990

Employment of aircraft mechanics is expected to have slower than average growth in the outlook period. Opportunities will be most favourable for mechanics of light aircraft, especially in northern communities.

MAIN TRAINING ROUTES

Many aircraft mechanics learn their trade in the Armed Forces. Large companies may hire experienced automotive mechanics and train them in aircraft servicing. The provincial New Careers program provides training for aircraft mechanics.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Rail Transport Equipment Mechanics and Repairers (8583)	1910	-20%	$19,165	Fair

EMPLOYMENT PROSPECTS TO 1990

Railroad mechanics are expected to show no growth in the outlook period, in spite of increases in rail traffic. Replacement demand will create a few openings.

MAIN TRAINING ROUTES

Railroad mechanics are trained on-the-job by railway companies in a multi-year apprenticeship program.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Industrial, Farm and Construction Machinery Mechanics and Repairers (8584)	3410	66%	$18,102	Very Good

EMPLOYMENT PROSPECTS TO 1990

Industrial mechanics are expected to have very favourable employment opportunities in the outlook period. Several of these occupations will have very strong demand as economic activity increases. Millwrights, sewing-machine mechanics, farm equipment mechanics, mining-equipment mechanics, construction-equipment mechanics and diesel mechanics will have the best opportunities.

MAIN TRAINING ROUTES

Heavy duty-equipment mechanics is an apprenticeable trade with a four-year training program. Industrial mechanics apprentices have a three-year program. Many persons have been trained through several years of on-the-job experience as mechanic's helpers. Short courses in heavy duty mechanics and diesel mechanics are available at the community colleges. Experience or a course in automotive mechanics is useful for entry into training positions.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Business and Commercial Machine Mechanics and Repairers (8585)	370	18%	$17,129	Average

EMPLOYMENT PROSPECTS TO 1990

Employment growth is expected to be average (some may be classified as electronic-engineering technicians, SOC 2165). Office equipment will be used to an even greater extent and technicians and mechanics with electronic skills will be in strong demand.

MAIN TRAINING ROUTES

Business equipment mechanics often learn their skills on-the-job while working for equipment manufacturers or distributors. A background in electronics is useful. Several high schools offer basic electronics courses and electronic technology can be studied at Assiniboine and Red River C.C.'s.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Precision Instrument Mechanics and Repairers (8588)	190	38%	$19,690	Very Good

EMPLOYMENT PROSPECTS TO 1990

Although this is a small occupation, the outlook is favourable due to growth in electronic instrumentation in industries such as mining, manufacturing, utilities, hospitals, etc. Employment growth will be more important than replacement demand as a source of job openings.

MAIN TRAINING ROUTES

Industrial instrument mechanics is an apprenticeable trade. Instrument technology may be studied at Red River C.C. Persons working with electronic equipment may learn instrumentation technology on-the-job. Upgrading of skills will probably be necessary from time to time as technology advances.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Other Mechanics and Repairers, n.e.c. (8589)	1090	63%	$16,360	Very Good

EMPLOYMENT PROSPECTS TO 1990

Favourable opportunities are expected for mechanics of various equipment and machinery, such as bicycles, chain saws, vending machines, fire-extinguishers, lawnmowers, pumps, snowblowers, and security devices.

MAIN TRAINING ROUTES

Most of these mechanics' skills are learned on-the-job. A background in automotive mechanics or appliance repair can be useful. A course in small motor repair is available at Keewatin C.C. and Assiniboine C.C. has a course for recreational vehicle technicians.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Painting and Decorating (Except Construction) (8595)	1240	109%	$14,615	Average

EMPLOYMENT PROSPECTS TO 1990

Employment in this occupation is expected to grow as fast as the average. Major employers are motor vehicle dealers and repair shops and manufacturers of transportation and other equipment.

MAIN TRAINING ROUTES

Most painters learn their skills on-the-job. Red River and Assiniboine C.C.'s offer courses in motor vehicle body repair and painting. An apprenticeship program in auto body repair is also available, combining two years of on-the-job and classroom training.

SOC 8711 to 8798:

CONSTRUCTION OCCUPATIONS

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Excavating and Grading (8711)	1760	72%	$17,812	Fair

EMPLOYMENT PROSPECTS TO 1990

Employment in heavy equipment operating is expected to increase at less than the average rate. Towards the end of the outlook period construction of major resource projects should raise employment levels. Work is normally very seasonal.

MAIN TRAINING ROUTES

Most heavy equipment operators have experience in handling large trucks or lighter material-handling equipment. A course in heavy equipment operating is available at Keewatin C.C.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Railway Section and Track Workers (8715)	1200	19%	$15,326	Average/Fair

EMPLOYMENT PROSPECTS TO 1990

These occupations are expected to become much larger while doubling of tracks and other track improvements related to the "Crow-Rate" changes are underway. Opportunities may be quite favourable (in seasonal periods) for two or three years, and then decline. Replacement demand should create a number of opportunities over the whole period.

MAIN TRAINING ROUTES

Most railway construction workers are trained on-the-job, advancing to skilled positions from labourer and helper positions.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Construction Electricians and Repairers (8733)	1805	-11%	$19,346	Average

EMPLOYMENT PROSPECTS TO 1990

Employment of construction electricians declined during the 1970's because of falling residential and hydro construction. During the outlook period growth is expected to be as fast as average because of increasing activity in both areas. Work is seasonal, but not as much as in other trades involving more outdoor activity.

MAIN TRAINING ROUTES

Electrical work is an apprenticeable trade, with a four-year program of on-the-job experience combined with classroom training. Courses in electricity are available at several high schools and the community colleges.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Wire Communications Equipment Installing and Repairing (8735)	1420	17%	$21,386	Fair

EMPLOYMENT PROSPECTS TO 1990

Little employment growth is expected in these occupations because telephone systems now use less labour for installation and maintenance. Upgrading of equipment will maintain employment levels of telephone installers. Better opportunities are expected for cablevision installers, especially in smaller communities.

MAIN TRAINING ROUTES

Training for these occupations is on-the-job. A knowledge of electronics and electricity may be useful. Courses in these fields are available at several high schools and the community colleges.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Foremen/women: Other Construction Trades (8780)	2590	4%	$20,264	Average

EMPLOYMENT PROSPECTS TO 1990

Employment growth of construction foremen/women will be almost as fast as average as construction activity increases. Roughly one foreman/woman will be required for every 5 construction trades workers. Replacement demand will create several opportunities. Work is very seasonal for many of the construction trades.

MAIN TRAINING ROUTES

Workers usually advance to supervisory positions after several years of experience in a construction trade.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Carpenters (8781)	4200	8%	$15,099	Fair/Average

EMPLOYMENT PROSPECTS TO 1990

Employment of carpenters is expected to grow about as fast as average, as construction activity increases. This is the largest construction trade and opportunities should be numerous, although keen competition is expected for most jobs in urban areas. Hydro developments at the end of the outlook period will create several job openings. Work is very seasonal.

MAIN TRAINING ROUTES

Carpentry is an apprenticeable trade, with a four-year program including on-the-job and classroom training. Many carpenters learn their trade by informal on-the-job experience in helper and labourer positions.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Brick and Stone Masons and Tile Setters (8782)	450	-12%	$14,383	Average

EMPLOYMENT PROSPECTS TO 1990

Employment of these occupations is expected to grow about as fast as average, as housing construction increases. Changing fashions in home design and decoration can affect opportunities. Work for brick and stone masons is very seasonal. Tilesetting is a small occupation with fewer opportunities, but work is more regular.

MAIN TRAINING ROUTES

Bricklaying is an apprenticeable trade, with a four-year program of on-the-job and classroom training. Many bricklayers, stone masons and tile setters learn their trade by years of experience assisting qualifed workers. Red River C.C. has a five-month course in masonry.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Concrete Finishing (8783)	205	-32%	$15,405	Fair/Average

EMPLOYMENT PROSPECTS TO 1990

Employment of concrete workers is expected to grow about as fast as average, with opportunities improving towards the end of the outlook period with commencement of hydro construction. Work is very seasonal.

MAIN TRAINING ROUTES

Concrete work is learned through informal on-the-job training while working in helper positions.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Plasterers (8784)	675	13%	$17,570	Fair

EMPLOYMENT PROSPECTS TO 1990

Employment growth is expected to be slower than average, as construction activity increases. Drywall installation, which is becoming much more common than plastering, requires much less labour. Opportunities will fluctuate considerably with the demand for new housing. Work is not as seasonal as for other construction trades.

MAIN TRAINING ROUTES

Lather and drywall mechanics are apprenticeable trades requiring a four-year and three-year program respectively, consisting of on-the-job and classroom training. Most drywall workers learn their trade through informal on-the-job training.

OCCUPATION SOC *	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Painters and Paperhangers (8785)	1650	0%	$15,061	Average

EMPLOYMENT PROSPECTS TO 1990

Employment of painters and paperhangers is expected to grow as fast as average as construction activity increases.

MAIN TRAINING ROUTES

Painting and decorating is an apprenticeable trade, with a four-year program of on-the-job and classroom training. Most painters and paperhangers learn their trade through on-the-job experience. Red River C.C. offers a five-month course in painting and decorating.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Insulating Occupations, Construction (8786)	220	88%	$14,975	Fair

EMPLOYMENT PROSPECTS TO 1990

Employment is expected to remain at the same level or decline slightly during the outlook period. Increased employment in recent years was largely related to government programs encouraging home insulation. Work is not as seasonal as in other construction trades.

MAIN TRAINING ROUTES

Insulation workers learn their skills on-the-job. Red River offers a part-time course in energy conservation for building operators.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Roofing and Waterproofing (8787)	330	39%	$13,908	Average

EMPLOYMENT PROSPECTS TO 1990

Employment is expected to grow about as fast as average as construction activity increases. Building maintenance requirements should maintain employment levels even without additional construction. Work is very seasonal.

MAIN TRAINING ROUTES

Roofing workers learn their trade through on-the-job experience.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Pipefitting and Plumbing (8791)	1525	-4%	$20,114	Fair/Average

EMPLOYMENT PROSPECTS TO 1990

Employment growth is expected to be about as fast as average, as construction activity increases. By the end of the outlook period opportunities should be more numerous due to hydro construction.

MAIN TRAINING ROUTES

Plumbing, steamfitting and sprinkler and fire protection installing are apprenticeable trades. Plumbing and steamfitting are five-year programs of on-the-job experience combined with classroom training, while installers of sprinkler and fire protection systems have a four-year course. Many persons in plumbing and pipefitting learn their trade through informal on-the-job training. Assiniboine and Red River C.C.'s offer courses in piping and plumbing.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Structural Metal Erectors (8793)	355	76%	$16,924	Fair/Average

EMPLOYMENT PROSPECTS TO 1990

Employment is expected to grow about as fast as average, as construction activity increases. Hydro construction at the end of the outlook period will improve opportunities.

MAIN TRAINING ROUTES

Most ironworkers and reinforcing metal workers learn their trade on-the-job. Some other provinces have apprenticeship programs.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Labouring and Other Elemental Work: Construction (8798)	2285	-11%	$16,036	Fair/Average

EMPLOYMENT PROSPECTS TO 1990

Employment of construction labourers is expected to grow about as fast as average, as construction activity increases. Opportunities should be more favourable at the end of the outlook period when hydro development begins. Work is normally seasonal and can depend very much on the overall level of construction activity.

MAIN TRAINING ROUTES

No specific skills are normally required for entry into unskilled labouring positions.

SOC 9111 to 9591:

TRANSPORT EQUIPMENT HANDLING, MATERIAL HANDLING AND OTHER CRAFTS

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Air Pilots, Navigators and Flight Engineers (9111)	470	83%	$33,461	Poor

EMPLOYMENT PROSPECTS TO 1990

Employment of these occupations is expected to grow very slowly during the outlook period. A recent slowdown in air traffic caused a large number of layoffs, and employment is not expected to return to the 1981 level for a few years. Best opportunities will be for pilots of small multi-engine airplanes operating in remote areas. Keen competition is expected for any jobs.

MAIN TRAINING ROUTES

A license is required to operate an aircraft in Canada. Private pilot licenses may be obtained through courses at any government-approved flying school. Following this, a commercial pilot license is required for employment as a pilot. Many pilots employed in Canada received their training in the armed forces.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Air Transport Operating Support (9113)	355	15%	$23,821	Fair

EMPLOYMENT PROSPECTS TO 1990

No growth is expected in these occupations during the outlook period. Air traffic declined significantly in 1982, and demand for new employees in air traffic control and flight support is expected to grow slowly.

MAIN TRAINING ROUTES

Air traffic controllers receive their training from Transport Canada in a course of approximately one year. Flight support workers normally receive training on-the-job.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Locomotive Operating/ Conductors and Brake Workers: Railways (9131/9133)	675/670	4%/-2%	$24,822/$23,885	Fair

EMPLOYMENT PROSPECTS TO 1990

Employment is not expected to grow during the outlook period, in spite of increasing rail traffic. Keen competition is expected for jobs.

MAIN TRAINING ROUTES

Training for these occupations is provided by railway companies.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Railway Transport Operating Support (9135)	835	83%	$22,149	Poor

EMPLOYMENT PROSPECTS TO 1990

No growth of employment and possible declines are expected during the outlook period for signallers, switchers and other yard workers. More efficient signalling and dispatching systems will reduce labour requirements. Keen competition is expected for jobs.

MAIN TRAINING ROUTES

Railway companies train operating support workers on-the-job.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Bus Drivers (9171)	2275	14%	$16,020	Fair

EMPLOYMENT PROSPECTS TO 1990

Growth of employment for bus drivers will be slower than average as current employment can handle a fairly large increase in traffic.

MAIN TRAINING ROUTES

City transit systems and inter-city buslines train bus drivers on-the-job. Experience in handling trucks is useful.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Taxi Drivers and Chauffeurs (9173)	905	-7%	$11,370	Fair

EMPLOYMENT PROSPECTS TO 1990

Although little employment growth is expected, replacement demand will create several opportunities.

MAIN TRAINING ROUTES

A chauffeur license is required for taxi driving or chauffeuring. Driving courses are available at most high schools and several private driving schools.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Truck Drivers (9175)	10315	32%	$17,343	Fair

EMPLOYMENT PROSPECTS TO 1990

Employment of truck drivers is expected to grow at almost the average rate. Truck drivers are employed in every industry, and the rate of overall economic activity affects the demand for truck drivers, both local and long-distance. Best opportunities will be for drivers with good driving records.

MAIN TRAINING ROUTES

A chauffeur's license is required for commercial truck driving. On-the-job training is the usual method of training, with drivers advancing from small to large trucks. Keewatin and Red River C.C.'s offer courses in truck driving.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Motor Transport Operating Occupations, n.e.c. (9179)	1140	257%	$14,593	Average

EMPLOYMENT PROSPECTS TO 1990

Employment of these occupations has grown rapidly due to the increasing demand for courier services. Employment growth is expected to be about as fast as average during the outlook period. Replacement demand due to turnover will create several opportunities.

MAIN TRAINING ROUTES

Training for courier services and dispatching is normally done on-the-job.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Hoisting Occupations, n.e.c. (9311)	640	-5%	$19,693	Fair

EMPLOYMENT PROSPECTS TO 1990

Little employment growth is expected for persons in occupations such as crane operator. Most workers are involved in manufacturing, mining and construction. Towards the end of the outlook period, construction activity will create some new opportunities.

MAIN TRAINING ROUTES

Training for these occupations is received on-the-job in various occupations involved in material handling. A course in heavy equipment operating is offered at Keewatin C.C.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Longshore Workers, Stevedores and Freight Handlers (9313)	1590	17%	$15,228	Fair

EMPLOYMENT PROSPECTS TO 1990

Employment of these occupations is expected to grow slower than the average. Transportation and trade are the major employers, although almost every industry employs material handlers. Replacement demand due to turnover creates opportunites each year.

MAIN TRAINING ROUTES

Limited skills are required for these occupations and any training required is provided on-the-job.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Material Handling Equipment Operators, n.e.c. (9315)	1425	11%	$14,655	Fair

EMPLOYMENT PROSPECTS TO 1990

Slower than average growth is expected in occupations such as fork-lift operator. Most workers are in manufacturing, transportation and trade. More efficient material handling systems will reduce the requirements for equipment operators in the long run, but this will be offset by increases in the amount of material to be moved.

MAIN TRAINING ROUTES

Training for these occupations is normally provided on-the-job.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Packaging Occupations, N.e.c. (9317)	2190	2%	$11,470	Fair

EMPLOYMENT PROSPECTS TO 1990

Packaging occupations are expected to have no employment growth during the outlook period. More efficient packaging equipment and systems will reduce the need for workers, although an increase in the amount of material produced will offset this decline. Most jobs are in manufacturing and trade.

MAIN TRAINING ROUTES

Training for these occupations is normally provided on-the-job.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Typesetting and Composing (9511)	355	-8%	$13,356	Fair

EMPLOYMENT PROSPECTS TO 1990

Declines in employment have been related to technological advances which are replacing monotype, linotype and hand composition with phototypesetting. Increased demand for printed material will result in a few new jobs. Most opportunities will be in phototypesetting. Replacement demand will create almost all opportunities.

MAIN TRAINING ROUTES

Most typesetters and compositors learn these skills on-the-job through apprenticeship or other similar programs. Red River C.C. offers a course in graphic arts which includes phototypesetting.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Printing Press Operators (9512)	860	74%	$16,947	Average

EMPLOYMENT PROSPECTS TO 1990

Employment is expected to grow as fast as average. Although more efficient presses are being used, growth in the amount of printed materials will create demand for press operators, particularly for web-press operators and lithographers. Lithography will offer the best opportunities.

MAIN TRAINING ROUTES

Most press operators learn their skills on-the-job through apprenticeship or another similar program. Red River C.C. offers a graphic arts course which includes training in operating printing presses.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Bookbinding (9517)	435	42%	$13,380	Average

EMPLOYMENT PROSPECTS TO 1990

Employment growth is expected to be as fast as average. Although more efficient bookbinding equipment will be used, the increased demand for bound printed materials will be enough to create new opportunities.

MAIN TRAINING ROUTES

Most bookbinders learn their skills on-the-job through apprenticeship or a similar program. Red River C.C. offers a course in graphic arts which includes training in bindery.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Power Station Operators (9531)	505	110%	$22,411	Poor

EMPLOYMENT PROSPECTS TO 1990

Employment is expected to remain at the same level through the outlook period. Most power station operators work in hydro-generating stations, which are not expected to have employment increases.

MAIN TRAINING ROUTES

Power station operators are normally trained on-the-job in an apprenticeship or similar training program. An electrical technology course may be required.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Stationary Engine and Utilities Equipment Operating (9539)	1145	-19%	$19,732	Average

EMPLOYMENT PROSPECTS TO 1990

Very slow growth is expected for stationary engineers during the outlook period. The use of electronic monitors can reduce significantly the number of skilled persons required to operate and maintain the equipment being installed in new buildings and plants. Replacement demand will create a few openings each year. Opportunities will be most favourable for first- and second-class engineers.

MAIN TRAINING ROUTES

Stationary engineers are certified for skill levels in four classes. Red River C.C. offers a program in power engineering leading to a 4th Class, 3rd Class or 2nd Class certificate. A qualifying examination must be passed for each level of certification.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Electronic Communications Equipment Operating (9550 to 9559)	535	29%	$20,395	Very Good

EMPLOYMENT PROSPECTS TO 1990

Operating occupations in communications are expected to grow faster than average during the outlook period, as radio and television broadcasting services are extended to smaller communities and ethnic groups.

MAIN TRAINING ROUTES

Courses in electronics are available at several high schools; some of these courses offer communications and broadcasting arts. The community colleges offer several courses related to this field: telecommunications, radio and television technician and electronic technology.

OCCUPATION SOC	EMPLOYMENT 1981	EMPLOYMENT CHANGE 1971-1981	AVERAGE ANNUAL EARNINGS 1980	FUTURE OPPORTUNITIES 1983-90
Photographic Processing (9591)	430	92%	$11,115	Average

EMPLOYMENT PROSPECTS TO 1990

Growth in these occupations is expected to be faster than average due to expansion of photographic services for amateur and professional photographers. However, keen competition may be expected for job openings.

MAIN TRAINING ROUTES

Several high schools offer courses in photography, including the processing of film. Red River C.C. offers a course for photographic technicians. Experience in amateur darkrooms is useful.

APPENDIX A

COMPUTERS AND CAREERS

COMPUTERS AND CAREERS

One of the fastest growing career areas of today is in computer-related occupations. A sharp growth in the use of computers has resulted in opportunities in a whole range of occupations directly involved with their development, application, operation and maintenance. Not only have many new occupations surfaced, but many existing occupations have been altered to deal with the growing use of this technology.

Indications are that computer usage will become even more widespread as new generations of hardware (computer equipment) come onto the market. Most large employers already use computers. In the next few years, smaller equipment with improved capacity and expanded capabilities will become more popular among small firms which could not justify the cost until now.

The most common application of computers, so far, has been in data processing: the collection, storage, sorting and manipulation of information for business or government administration and scientific research. With more information becoming available, there has been a rapid increase in the number of administrative and technical workers compared to other occupations. In fact, several occupations unique to data processing have developed, while many traditional occupations have undergone basic changes, both in duties performed and skills required. Occupations required for data processing operations include systems analysis, computer programming, data-entry, and computer maintenance. Table 1 describes the duties of several of the computer-related occupations.

In traditional occupations such as clerical work, computers have changed the way work is planned and organized, the way equipment or machines are operated, and the way records are kept. Computer terminals (e.g., video-display terminals or VDT's) are now used by workers in many occupations, and their use will likely expand. Terminals allow information to be entered directly into a record bank without the need for keypunch or other data-entry workers. For example, travel agents use terminals to obtain flight schedule information directly from a computerized data bank, and to enter sales directly so that the record of available space is adjusted. Similarly, bank tellers and sales clerks use terminals built into bookkeeping equipment and cash registers to keep accounts and inventories up-to-date.

Computers are increasingly being introduced into work environments other than offices or research establishments. Various kinds of equipment contain microprocessors, or miniaturized computer circuits, which allow the users to provide a higher quality product or service. This equipment is used in work places as varied as factories, farms and hospitals. One example of this is the numerical control machine which, under magnetic tape instructions, combines the functions of several metal-working machines such as lathes, drills and grinders. In this case production jobs involve setting up and monitoring the equipment rather than operating the machines. Table 2 shows how several occupations are being affected by the application of computerized equipment such as electronic sensing devices, word processors, and electronic communications networks. The effects of this technology would also have an impact on many occupations not included on this list.

TABLE 1
COMPUTER-RELATED OCCUPATIONS

This table describes the tasks performed by various workers whose jobs directly involve computers. In large organizations the work may be specialized along these lines; where there are fewer workers, each one might combine the tasks of two or three of these jobs. The tasks involved in designing computer equipment such as engineering, drafting, etc., are not included.

SYSTEMS ANALYSTS - The analyst finds out exactly what problem needs to be solved and decides how a computer can be used most efficiently to provide the solution. By discussing the problem or the job to be done with managers and other workers, the analyst learns exactly what kinds of information are needed, how it is currently collected and recorded, what kinds of decisions will be made with it, and how quickly it is needed. The analyst decides whether the job can be done by existing equipment and staff, or whether new equipment or staff is needed.

Outlook:
Excellent
1982 Salary:
$23,500 to 28,000

The analyst develops a system for processing information. Part of the job is deciding how to collect data, how to prepare it for the machines, process it, store it and how to make it available to users.

The analysts explains to users and managers how the system works, how much it will cost, and what it can do, compared with other systems. Often the analyst will write specifications for the programs for use by programmers.

Systems analysts usually specialize in either business and commerical or scientific and engineering work.

Many different titles for systems analysts are used, e.g., Methods Analyst, Procedures Analyst, Management Analyst, etc. depending on areas of specialization.

COMPUTER PROGRAMMERS -

Outlook:
Very Good
1982 Salary:
$23,500 to 26,280

Systems Programmers write detailed instructions (or software) which prepare the computer for performing a range of tasks. This work enables the computer to understand instructions in a chosen computer language, and to control peripheral equipment such as card sorters and printers. The systems program tells the computer how much of its memory will be needed for each job and directs the data flow in general terms.

Outlook:
Excellent
1982 Salary:
$17,500 to 22,000

Applications Programmers instruct the machine to perform a specific task to provide the information required. They write programs that tell the machine exactly what to do using special computer languages. These computer languages may be written in scientific terms or in terms very close to layman's language, but the computer will understand only commands expressed in the language's dictionary of terms. Once the program is written, the programmer tests it and corrects any errors, or debugs the program. Finally, instructions are prepared for the computer operators and data-entry clerks.

Some employers may require persons to do the job of both analyst and programmer. These positions are termed Programmer-Analyst.

OTHER COMPUTER SPECIALISTS -

Outlook:
Very Good
(Limited employment in Manitoba)
1982 Salary:
$26,000

Data Base Specialists design and control the use of the information resources, or data base. They may analyze the data and decide whether information areas could be expanded for the organization's use, or whether some existing information is not needed. They set up security procedures to protect the data base from intruders or errors in programming.

Outlook:
Very Good
(Limited employment in Manitoba)
1982 Salary:
$28,000

Data Communications Programmers and Analysts are specialized programmers and analysts who link up computers and peripheral equipment into networks. Electronic transmission of information is by way of satellites or telephone lines. Data communication specialists work on network design, traffic analysis, and data communications software.

Outlook:
Very Good
1982 Salary:
$20,200

Documentation Specialists are technical writers knowledgeable about the various computer systems, their user manuals, and marketing information. They advise users and buyers on the features of different systems and how they can be used to do different tasks. By dealing with both designers and users of a system, they help to design new systems.

Outlook:
Very Good
1982 Salary:
$30,000 to 34,700

Managers are required in organizations that employ several computer workers. They may direct the technical staff that maintain the system, the programs, telecommunications, or data base. They may direct all computer and peripheral machine operations, including data entry, data control, scheduling, quality control, and distribution of output. They may be executives who are responsible for all information gathering and processing in the organization.

Outlook:
Excellent
1982 Salary:
$22,356

Sales Representatives and Technical Support Representatives serve as liaison between computer manufacturers and the users. They must be knowledgeable about the capabilities of the equipment and how to do basic systems design and programming. They must be familiar with business procedures, so that the customer's needs can be met by the appropriate hardware and software, and so that they can recommend specific changes to manufacturers to improve the equipment or programs.

Outlook:
Very Good
1982 Salary:
$20,000

COMPUTER SERVICE TECHNICIANS - Technicians install, maintain and repair the computer system, or hardware. Installing equipment means laying cables, hooking up electrical connections, testing the machinery, and correcting any problems before the customer uses the system. System maintenance includes routine adjustments, oiling moving parts, and cleaning electrical and mechanical parts. Routine checks should uncover any loose connections or defective components or circuits. Technicians may run the systems at peak capacity to locate potential problems. When computer equipment breaks down, technicians find the cause of the failure and make repairs to any part of the system. They may run special diagnostic programs to pinpoint problems.

COMPUTER OPERATORS -

Outlook:
Average
1982 Salary:
$13,800 to 17,100

Computer Console Operators actually run the computer when it performs its operations. They follow the instructions of the programmer in loading the computer with the appropriate cards, discs, tapes, etc., make sure that the output unit has the paper, tape, or other material it needs, clear the system, and start the machine. They monitor the machine when running, watching for signals of malfunctions and take the correct action when breakdowns do occur. Console operators change the computer circuit boards or chips to run different programs. They keep a log of tasks done by the computer.

Outlook:
Average (Limited employment in Manitoba)
1982 Salary: n.a.

Production Control Clerks ensure that all the information needed for a data-entry job is together, schedule the due date, forward it for processing to the appropriate operators, and check the work after it is finished.

Outlook:
Average
1982 Salary:
$12,700 to 14,482

Data-Entry Clerks operate machines with a keyboard similar to a typewriter, which transforms information onto cards, magnetic discs or tapes. Keypunch machines produce punched cards, but this method is not as common now, as certain advances in computer technology have made the use of tape and disc more common.

Outlook:
Average (Limited employment in Manitoba)
1982 Salary: n.a.

Tape Librarians classify and catalogue the punched cards, discs, or tapes containing data. They keep files of current and previous versions of programs, listings and tape data.

TABLE 2

HOW COMPUTERS AFFECT WORKERS IN SELECTED OCCUPATIONS

1171 - Accountants - Computers and data processing systems are used to conduct regular accounting, to simulate conditions under various budgeting constraints and to consider investment alternatives.

214/5 - Engineers - Computers are used for design and simulated operation of new methods or products, and micro-processors are built into many new products for accurate control.

2351 - Librarians and Archivists - Librarians use automated equipment to store and retrieve information, catalogue books, etc.

2731/3 - Teachers - Some schools are experimenting with computers used as teaching aids. The more wide-spread computers become, the more students need to know the basics of computer usage (sometimes called "computer literacy").

3111 - Doctors - Medical researchers use computers to analyze research results. Some sophisticated medical equipment has built-in micro-processors to analyze symptoms, to control medication, etc.

4113 - Typists and Clerk Typists - Electronic word processors are small computers with a much wider range of capabilities than a regular typewriter.

4155 - Stock Clerks - Computers are being used to store records of inventories, to keep records of sales and purchases.

4173 - Mail and Postal Clerks - Electronic equipment is used to transfer information between businesses. This capability may be extended to homes in the near future, resulting in a reduction of personal mail.

5135 - Salesworkers - Many cash registers also record sales and automatically adjust inventory records.

7181 - Farm Workers - Modern farming equipment is often fitted with electronic devices which automatically control seed flow, soil depth, etc.

7717/8/9 - Mining Occupations - Electronic sensors connected to computers monitor air quality in underground work places; computers are used to control conveyor belts carrying ores.

8213 - Baking, Confectionery Making - Computers control mixing of ingredients in a "continuous mix" operation that saves time and labour.

8231 - Sawmill Sawyers - Sawmills with computers calculate the most efficient use for each log as it is fed into the saw.

8313 - Metal Machining and Set-Up Occupations - Computer-numerical control (CNC) machines are capable of carrying out accurately functions previously done by several machines, while set-up may be done automatically on instructions from a design computer.

8335 - Welders - Computer controlled robots can be programmed to weld and solder in working conditions unfit for humans.

8534 - Electronic Equipment Assemblers - Assembly of components can be done by robot assembly lines which are fed parts by machine loaders.

8581 - Motor Vehicle Mechanics - Diagnosis of mechanical problems can be done by connecting a computer to a vehicle's electronic system. Knowledge of electronics is becoming more essential as vehicles contain more sophisticated equipment.

9183 - Taxi Drivers - Computerized handling of requests for service mean more efficient dispatching of vehicles.

9511 - Typesetting and Composing - Keyboards are used to select size and style of type, column width, spacing. Each character is stored in a computer. The computer displays on a screen columns of type as composed, for editing and correction. The screen is photographed to obtain a film of the completed material.

9533 - Stationary Engine Operating and Maintaining (Stationary Engineers) - Very powerful centralized equipment is automatically controlled by a central console.

APPENDIX B

ALPHABETICAL INDEX

APPENDIX B

Page

A

1171 Accountants and Auditors 27
4131 Accounting Clerks 44
1134 Administrators in Medicine and Health 25
1133 Administrators in Teaching . . . 24
3314 Advertising and Illustrating Artists 40
2165 Agricultural Engineers 32
2131 Agriculturalists 29
8515 Aircraft Fabricating and Assembling 65
8582 Aircraft Mechanics and Repairers 70
9111 Air Pilots, Navigators and Flight Engineers 80
9113 Air Transport Operating Support. 80
2164/5 Architectural and Engineering Technologists and Technicians. . 32
6116/7 Armed Forces, Commissioned Officers and Other Ranks 51
3375 Attendants, Sport and Recreation 41
3136 Audio and Speech Therapist . . . 38
8581 Auto Body Repairer 69

B

8213 Baking and Confectionery Making. 61
4135 Bank Clerks 44
6143 Barbers and Hairdressers 53
6123 Bartenders 52
8337 Boilermakers, Platers and Structural Metal Workers . . . 64
9517 Bookbinding 83
4131 Bookkeepers and Accounting Clerks 44
8782 Brick and Stone Masons and Tile Setters 76
9171 Bus Drivers 81
8585 Business and Commercial Machine Mechanics and Repairers 71
5191 Buyers, Wholesale and Retail Trade 50

C

8541 Cabinet and Wood Furniture Makers 67
2333 Camp Counsellors 33
8781 Carpenters 75
4133 Cashiers and Tellers 44
9173 Chauffeurs 81
6191 Charworkers 54
6121 Chefs and Cooks 52
8160/8179 Chemicals, Petroleum, Rubber and Plastic Processing. 61
2111 Chemists 28
3139 Child Care Attendants 38
6149 Child Care Occupations 54
2143 Civil Engineers 30
8150/8159 Clay, Glass and Stone Processing and Forming 61
6191 Cleaners 54
6133 Cleaners, Lodging, except Private Households 53
4197 Clerks, General Office 47
4113 Clerk-Typists 43
3370 Coaches, Trainers and Instructors, Sport & Recreation 41
5133 Commercial Travellers 48
9550/9559 Communications Equipment Operating. 85
2791 Community College and Vocational School Teachers. . . 36
2157 Community Planners 31
4143 Computer Operators 45
2183 Computer Programmers 32
8783 Concrete Finishing 76
9133 Conductors and Brake Workers. . 80
8213 Confectionery Making 61
8733 Construction Electrician . . . 74
8584 Construction Equipment Mechanic 70
8798 Construction Labourer 78
8523 Construction Equipment Fabricating and Assembling. . . 66
6121 Cooks 52
8137 Coremaking 60
9179 Couriers 82
7115 Crop Farming 56
7185 Crop Farm Workers 56

D

4143 Data Entry Operators 45
4143 Data Processing Equipment Operators 45
8595 Decorating, Except Construction 72
3158 Dental Hygienists and Assistants 39
3313 Designers, Product and Interior 39
2163 Draughting 31
8553 Dressmakers 68
7713 Drilling, Rock and Soil 58
6162 Dry Cleaning 54
8784 Drywallers 76

E

2311 Economists 32
3351 Editors 40
2144 Electrical Engineers 30
8531 Electrical Equipment Fabricators and Assemblers 66
8533 Electrical Equipment Installing and Repairing 66

Page

9550/9559 Electronic Communications Equipment Operating. 85
4143 Electronic Data Processing Equipment Operating 45
8534/5 Electronic Equipment: Fabrication and Assemblers; Installers and Repairers 67
2731 Elementary and Kindergarten Teachers 35
2165 Engineering Technicians and Technologists 32
8711 Excavating and Grading 74

F

8531 Fabricating and Assemblers: Electrical Equipment. 66
8534/5 Fabricating and Assemblers: Electronic Equipment. 67
8584 Farm Equipment Mechanic 70
7113/5/9 Farmers 56
8523 Farm Machinery Fabricating and Assembling 66
7197 Farm Machinery Operators 56
1146 Farm Management 27
4161 File Clerks 45
4135 Finance Clerks 44
1135 Financial Management 25
2792 Fine Arts Teachers 36
6111 Fire Fighting 50
7313 Fishing: Net, Trap and Line . . 57
8228/9 Food and Beverage Processing: Labouring and Occ. n.e.c 62
6125 Food and Beverage Serving 52
8580 Foremen/women: Mechanics and Repairers 69
8130 Foremen/women: Metal Processing. 60
8780 Foremen/women: Other Construction Trades 75
7511 Forestry Conservation 57
4193 Freight Agents 47
9313 Freight Handlers 83

G

4197 General Office Clerks 47
8150/8159 Glass Processing and Forming 61
1113 Government Administrators 24
3314 Graphic Artists 40
6115 Guards and Related Security Occupations 51

H

6143 Hairdressers 53
9311 Hoisting Occupations, n.e.c. . . 82
6142 Housekeepers and Servants . . . 53

Page

I-J-K

8533 Industrial Electricians 66
8584 Industrial, Farm and Construction Equipment Mechanics and Repairers 70
4171 Information Clerks 46
8735 Installing and Repairing: Wire Communications Equipment . . . 75
1116 Inspectors and Regulatory Officers, Government 24
3370 Instructors, Sport and Recreation 41
8588 Instrument Mechanics 71
8786 Insulating Occupations, Construction 77
4135 Insurance, Bank and Other Finance Clerks 44
5171 Insurance Sales 49
3313 Interior Design 39
6191 Janitors, Charworkers and Cleaners 54
4143 Keypunch Operators 45

L

8228/9 Labouring and Occupations n.e.c.: Food and Beverage Processing 62
8798 Labouring and Other Elemental Work: Construction 78
7195 Landscapers 57
6162 Laundering and Dry Cleaning . . 54
2343 Lawyers and Notaries 33
2351 Librarians, Archivists and Conservators 34
4161 Library and File Clerks 45
3134 Licensed Practical Nurses (LPN) 37
2135 Life Sciences Technologists and Technicians 29
7113 Livestock Farmers 56
7183 Livestock Farm Workers 56
9131 Locomotive Operating: Railways 80
6133 Lodging Cleaners, except Private Households 53
7517 Log Hoisting, Sorting and Moving 58
9313 Longshore Workers, Stevedores and Freight Handlers 83

M

8523 Machinery Fabricators and Assemblers 66
8313 Machinist and Machine-Tool Setting-Up 63
8315 Machine-Tool Operators 63
4173 Mail and Postal Clerks 46
1179 Management and Administration Occupations, n.e.c. 28
1145 Management, Construction Operations 27

Page

9315 Material Handling Equipment Operators, n.e.c. 83
8215 Meat Cutting, Canning, Curing and Packing 62
2147 Mechanical Engineers 30
8582 Mechanics, Airport 70
8589 Mechanics and Repairers, n.e.c. . 71
8585 Mechanics, Business and Commercial Machines 71
8584 Mechanics, Industrial, Farm and Construction Equipment 70
8581 Mechanics, Motor Vehicle 69
8588 Mechanics, Precision Instruments. 71
8583 Mechanics, Rail Transport Equipment 70
3156 Medical Laboratory Technologists and Technicians 39
8137 Metal Casting 60
8130 Metal Processing: Foremen/women. 60
8584 Millwrights 70
8110/8119 Mineral Ore Treating 60
7717/8 Mining and Quarrying 58
2511 Ministers of Religion 34
9179 Motor Transport Operating Occupations, n.e.c. 82
8513 Motor Vehicle Fabricating and Assembling 65
8581 Motor Vehicle Mechanics and Repairers 69
8137 Moulding, Coremaking and Metal Casting 60
3332 Musicians and Singers 40

N

7313 Net, Trap and Line Fishing . . . 57
7195 Nursery and Related Workers . . . 57
3131 Nurses, Registered (RN), Graduate and Nurses-in-Training 37
3134 Nursing Assistants, Registered (LPN) 37
3135 Nursing Attendants 37
3139 Nursing, Therapy and Related Assisting Occupations 38

O

1179 Occupations in Management and Administration, n.e.c. 28
3132 Orderlies 37
2739 Other Elementary and Secondary School Teachers 35
8589 Other Mechanics and Repairers, n.e.c. 71

Page

P

9317 Packaging Occupations 83
8785 Painters and Paperhangers . . . 77
8595 Painting and Decorating (except Construction) 72
8785 Paperhangers. 77
8250/8259 Papermaking 62
8551 Patternmaking, Marking and Cutting: Textile, Fur and Leather Products 68
4143 Peripheral Equipment Operators. 45
1136 Personnel and Industrial Relations Management 25
1174 Personnel and Related Officers. 28
8160/8179 Petroleum Processing 61
3151 Pharmacists 38
9591 Photographic Processing 86
2117 Physical Sciences Technologists and Technicians 29
3111 Physicians and Surgeons 36
3137 Physiotherapists 38
8791 Pipefitting and Plumbing . . . 78
8784 Plasterers 76
8160/8179 Plastic Processing 61
8337 Platers 64
8791 Plumbing 78
6112 Police Officers and Detectives, Government 50
4173 Postal Clerks 46
9531 Power Station Operators 85
8588 Precision Instrument Mechanics and Repairers 71
9512 Printing Press Operators . . . 84
3313 Product and Interior Designers. 39
1143 Production Management 26
8250/8259 Pulp and Papermaking 62

QR

8537 Radio and Television Repairers. 67
8583 Rail Transport Equipment Mechanics and Repairers 70
8715 Railway Section and Track Workers 74
9135 Railway Transport Operating Support 81
5172 Real Estate Sales 49
4171 Receptionists and Information Clerks 46
2333 Recreation Directors 33
8535 Repairing: Electronic Equipment 67
7713 Rock and Soil Drilling 58
8787 Roofing and Waterproofing . . . 77
8160/8179 Rubber Processing 61

Page

S

5135 Sales Clerks and Salespersons, Commodities 48
5171 Sales, Insurance 49
5130 Sales Occupations, Supervisor . 47
5172 Sales, Real Estate 49
5131 Sales, Technical 48
2733 Secondary School Teachers . . . 35
4111 Secretaries and Stenographers . 43
8715 Section and Track Workers, Railway 74
5145 Service Station Attendants . . 49
1142 Services Management 26
8563 Sewing Machine Operators, Textile and Similar Materials 69
8333 Sheet Metal Workers 64
4153 Shipping and Receiving Clerks . 45
8215 Slaughtering and Meat Cutting . 62
2333 Social Services Assistant . . . 33
2331 Social Worker 33
4193 Station Agents 47
9539 Stationary Engine and Utilities Equipment Operating 85
4111 Stenographers 43
4155 Stock Clerks 45
8782 Stone Masons 76
8150/ 8159 Stone Processing and Forming 61
8793 Structural Metal Erectors . . . 78
8337 Structural Metal Workers . . . 64
4130 Supervisors: Bookkeeping and Account Recording 43
6120 Supervisors: Food and Beverage Preparation and Service 51
5130 Supervisors: Sales Occupations, Commodities 47
3111 Surgeons 36
2161 Surveyors 31
2183 Systems Analysts and Computer Programmers 32

T

8553 Tailors and Dressmakers 68
9173 Taxi Drivers and Chauffeurs . . 81
2731 Teachers, Elementary and Kindergarten 35
2791 Teachers, Community Colleges and Vocational Schools 36
2792 Teachers, Fine Arts 36
2739 Teachers, Other Elementary and Secondary Schools 35
2733 Teachers, Secondary Schools . . 35
5131 Technical Sales 48
2164 Technologists and Technicians, Architectural 32
2165 Technologists and Technicians, Engineering 32
2135 Technologists and Technicians, Life Sciences 29

Page

3156 Technologists and Technicians, Medical Laboratory 39
2117 Technologists and Technicians, Physical Sciences 29
4175 Telephone Operators 46
8537 Television Repairers 67
4133 Tellers 44
8551 Textile, Fur and Leather Products: Patternmaking, Marking and Cutting 68
3136 Therapists, Audio and Speech. . 38
3138 Therapists, Occupational. . . . 38
4193 Ticket Agents 47
8782 Tile Setters 76
7513 Timber Cutting 58
8311 Tool and Die Makers 63
3370 Trainers, Sport and Recreation. 41
4193 Travel Clerks, Ticket, Station and Freight Agents 47
9175 Truck Drivers 82
9511 Typesetting and Composing . . . 84
4113 Typists and Clerk-Typists . . . 43

U-V

2711 University Teachers 34
8563 Upholsterers 69

W

6125 Waiters and Waitresses 52
8335 Welding and Flame Cutting . . . 64
2333 Welfare and Community Services. 33
8735 Wire Communications Equipment Installing and Repairing . . . 75
8541 Wood Furniture Makers 67
8350/ 8359 Wood Machining 65
4143 Word Processor Operator 45
3351 Writers and Editors 40

POOR

QUALITY

ORIGINAL